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## SPECIAL ARTICLES

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Rates of Physical Impairments in 28 Occupations

Sex Differences in Prevalence of Dental Caries

Trachoma Survey in the Rio Grande Valley, Tex.



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HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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individuals included in the various occupations, because it is quite apparent that individuals who have purchased life insurance and have also taken the trouble to obtain a health examination are not typical of the general industrial worker. This fact is especially true of certain of the occupations which are made up largely of persons on the lower economic planes.

Women, foreign-born, and colored persons have been excluded from the study. The number of women in specific occupations was not sufficiently large to permit a determination of rates of physical impairment. It is not probable that the foreign-born or colored individuals who would be included in records of examinations of this character would be sufficiently representative to be used.

The examinations are of the periodic type, but for this analysis first examinations only have been considered.

In the paper dealing with broad occupational classes, it was found that the "skilled trade" group showed unusually high impairment rates for the following conditions: Defective vision, uncorrected; defective hearing; carious teeth; slightly infected gums; pyorrhea, definite; insufficient dentistry; frequent colds; bronchitis; organic valvular lesions of the heart; enlarged heart; arterial thickening; constipation; backache; insomnia; use of patent medicines; habitual use of laxatives; varicose veins; albumin in urine; and a tendency to rank high for a number of other conditions, such as sugar, pus, blood, and casts in the urine. The only condition in the "skilled trade" group showing a rate greatly below that of the other groups was defective vision, corrected, and this low rate means merely that a larger proportion of persons in the "skilled trade" group lets defects of vision go uncorrected.

The purpose of the present paper will be to determine in so far as possible whether specific occupational factors account for these higher rates.

The questions answered by the policyholder in his personal history were—"Occupation;" "Particular kind of work;" "Previous occupation." The physicians who were making the examinations were not concerned with the matter of occupation or the making of records for purely statistical purposes. It is impracticable, therefore, to make a rigorous classification according to industry and occupation, and each of the groups used must be regarded as more or less indefinite in nature. At the same time reference to the 28 occupations for which there were sufficient numbers to permit analysis will show that a fairly specific classification has been possible.

As was stated in previous papers, for the purposes of this series of studies the examinations have been divided into two groups, namely, those made in the "head" offices of the Institute (principally in New York, but later also in Chicago and Boston), and those made in

the "field" (all other localities in the United States and some in Canada). Considerable difference in the rates for the same impairment has been revealed by comparing the results in these two groups, but for the purposes of the present study it has generally been advisable to consider only the "field" examinations, because of the small numbers in the other group.

Very little information is available as to the inherent differences in individuals following specific occupations. One fundamental factor, however, lies in the age distribution of persons in this study. Table 1 presents the average age of persons in each occupation in the "field" and "head" offices, as well as the number of persons examined.

TABLE 1.—Average age and number of workers in each occupation <sup>1</sup>

Occupation	Average age in years		Number of persons	
	In field	At head office	In field	At head office
Total.....	37.8	37.1	17,294	3,293
Blacksmiths.....	43.6	45.8	172	17
Domestic help.....	42.2	38.8	188	44
Carpenters.....	41.8	42.3	1,673	153
Bricklayers.....	40.7	38.6	298	44
Painters.....	39.5	40.7	623	147
Firemen (stationary).....	39.4	40.5	617	70
Tailors.....	39.3	39.4	1,053	486
Waiters and hotel servants.....	39.1	36.6	282	112
Butchers.....	38.8	38.5	564	132
Firemen, police.....	38.7	38.6	440	117
Barbers.....	38.7	38.8	721	95
Metal workers.....	38.6	37.4	247	40
Ironworkers.....	38.6	38.0	332	42
Foundry workers.....	38.6		173	5
Street-railway employees.....	38.5	35.9	287	20
Woodworkers.....	38.4	37.8	396	42
Plumbers, pipe and steam fitters.....	38.0	33.8	829	148
Miners.....	37.2		288	3
Shoe-factory operatives.....	37.1	36.2	532	62
Printers.....	36.9	36.3	977	232
Textile mill operators.....	36.7	37.7	207	24
Machinists (office, store).....	36.4	36.6	3,070	265
Telephone and telegraph operators.....	36.4	34.9	410	42
Factory workers (unclassified, light).....	36.1	35.2	611	104
Garment operatives.....	35.2	35.3	268	240
Chauffeurs.....	35.1	32.9	505	232
Cutters (cloth).....	34.8	35.4	327	174
Electricians.....	34.2	32.8	1,014	199

<sup>1</sup> 20 to 59 years of age.

It will be noted that, in general, the average age does not differ widely, being from about 39 to 37 years for half of the occupations. However, a few groups show more marked differences. For instance, the average age of blacksmiths in the "field" data is 44 years and the average age of electricians 34 years. The effect which these distinctions in age have upon the impairment rates will be considered in the course of the paper.

It is difficult to interpret the differences in impairment rates for the various occupations, because the number of persons in each occupa-

tion varies greatly, ranging from 3,070 to 172 in the "field" data. It was also found that the rates of specified impairments varied widely in the different occupations, from about 40 per cent to about 1 per cent. Accordingly, a criterion was required in order to eliminate rates where the chance fluctuation was too great. To do this it was necessary to have an objective, arbitrary limit, independent of the opinion as to whether the rate in question was relatively high or low in comparison with other rates for the same impairment. Such a criterion could not be based entirely on the number of persons in the occupation, since even the occupations with relatively few could be used for the very common impairments; nor on number of cases of a particular condition, since the smaller the rate the fewer the cases required to establish significance. By reference to the actual probabilities involved, the following method was developed: If the number of individuals in a given occupation was too small to yield, at the median rate for all occupational groups,  $50\sqrt{pq}$  cases, that occupation was omitted for that particular impairment.<sup>4</sup>

Although some of the individuals classed in the various occupations are more than 60 years of age, it was felt that a more precise indication of the rate of impairment among persons actually employed in industrial work would be obtained by limiting the study to individuals between 20 and 60 years of age, and this has been done throughout the discussion.

The basic data on which the analysis rests are given in Table 2. The data are limited to the "field." In the appendix will be found tables showing the number of cases for both "head" and "field."

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<sup>4</sup> Here  $p$  represents the probability that the impairment would be found in the whole group (i. e., the rate reduced to a unity basis), and  $q$  the probability that it would not be found. It will be noticed that the product of these two probabilities becomes less as the rate decreases (i. e., from 50 per cent down). The constant 50 was chosen arbitrarily to give a criterion of 25 cases at an average impairment rate of 50 per cent, since the square root of one-half times one-half is one-half. This would require a population of 50 persons. If the average rate for an impairment is 10 per cent, then the square root of the two probabilities is 0.3, and 15 cases are required, or a population of 150. At 5 per cent we have 11 cases and a population of 220. At 3 per cent we have about 8 cases and a population of about 275. A graph was prepared from which these values were easily derived.

TABLE 2.—Impairment rates by cause in each specific occupation, after application of criterion

Nature of impairment, disease, or symptom	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Machinists (office, store)	Firemen (stationary)	Shoe factory operatives	Textile mill operators	Factory workers (unclassified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipe and steam fitters	Electricians	Waiters and hotel serv-ants	Domestic help	Chauffeurs	Barbers	Butchers	Street railway employees	Telephone and tele-graph operators	Firemen, police
Respiratory:							1.8	0.8	1.3	1.3	1.5			1.4		0.5	1.2		1.1	0.8			1.8	0.8	0.9			
Tuberculosis, actual or suspected																												
Lung pathology not suggestive of tuber-culosis																												
Bronchitis, emphy-sema	6.6	4.2			4.6	5.1	3.2	3.4	4.1		4.6	5.4	6.3	7.1	7.3	5.8	4.2	3.4	3.7	4.2	6.0		4.2	3.5	5.7	4.5	5.4	1.8
Enlarged, diseased, or buried tonsils						1.3	1.2	1.6	1.7		2.0	1.6		3.2		1.3	1.8		2.1	1.8			1.0	1.2	2.8		1.5	1.8
Deflected septum—Moderate or marked	25.7	25.3	26.6	22.1	28.0	26.8	23.5	24.6	24.1	24.2	23.0	32.0	43.5	35.6	35.8	23.4	24.6	25.2	28.9	30.3	32.3	26.6	30.9	27.2	28.4	26.8	27.6	25.9
Slight	1.0	4.5			4.9	5.1	3.5	3.7	3.2		4.6	4.0	4.9	4.1	3.7	5.5	4.6	3.9	5.2	3.9	4.3		5.7	1.8	4.3	5.9	3.4	4.1
Naso-pharyngitis	24.0	24.7	19.1	22.1	23.3	22.5	22.7	24.5	13.9	21.3	21.9	28.5	36.7	30.8	31.2	26.0	24.9	22.1	23.5	25.7	28.0	19.1	31.3	24.6	24.5	24.4	23.7	26.6
Hypertrophic rhini-tis (enlarged turbi-nates)	6.9	9.3	5.8	4.7	8.1	10.4	9.2	7.0	8.8	4.3	10.6	5.2	11.6	9.2	9.5	6.6	7.5	7.7	10.9	8.4	6.0	6.4	6.9	9.2	9.0	8.0	11.0	8.4
Frequent colds	11.2	19.9	19.1	19.8	21.3	22.7	18.2	19.0	15.4	16.9	20.6	20.8	37.7	28.4	32.1	21.5	20.4	17.1	21.1	19.6	21.3	17.6	28.9	18.7	20.0	21.6	20.2	19.5
Digestive:	17.4	21.4	14.5	18.0	19.3	18.9	17.4	16.9	17.7	13.8	19.4	17.1	16.0	13.7	15.3	16.4	10.5	21.1	17.1	13.5	12.1	13.8	20.5	10.5	11.5	14.6	13.8	15.9
Teeth—																												
Carious teeth, septic roots	17.7	20.5	19.1	21.5	15.0	17.9	16.1	21.1	17.3	16.9	20.0	14.9	18.3	15.9	11.7	23.4	21.0	23.2	22.4	15.0	19.1	22.9	18.3	13.3	17.4	16.7	11.7	13.2
Heavy dentistry (X-ray advised)	24.3	33.4	31.2	26.7	30.0	24.2	31.4	33.5	29.1	28.0	37.8	32.7	40.7	33.6	29.6	31.6	28.1	27.2	30.4	33.3	36.5	22.3	37.0	29.3	34.4	35.2	31.7	35.5
Missing teeth	7.3	7.2			6.1	6.1	7.1	8.1	7.5	5.8	8.2	7.9	7.5	7.1	10.1	8.3	9.9	8.1	7.4	7.3	6.0	9.6	7.4	4.0	5.9	8.4	5.6	7.3
Pyorrhea (definite)	7.3	7.8			5.8	5.8	6.3	9.4	6.8	5.3	6.1	5.2	9.0	8.3	4.9	11.1	9.3	7.0	8.0	4.5	9.9	6.4	6.1	7.2	7.3	10.1	6.1	4.8
Slightly infected gums	10.4	13.6	12.1	16.3	16.1	9.6	11.1	12.2	11.8	11.6	14.1	13.5	17.5	21.6	13.1	13.6	12.9	15.8	14.2	9.4	14.5	14.4	13.8	12.6	12.4	12.5	7.3	12.3



TABLE 2.—*Impairment rates by cause in each specific occupation, after application of criterion—Continued*

Nature of impairment, disease, or symptom	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Machinists (office, store)	Firemen (stationary)	Shoe factory operatives	Textile mill operators	Factory workers (un- classified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipe and steam fitters and	Electricians	Waiters and hotel serv- ants	Domestic help	Chaudrours	Barbers	Butchers	Street railway em- ployees	Telephone and tele- graph operators	Firemen, police
<b>Digestive—Continued.</b>																												
Other—																												
Gastric disturb- ances	4.9	7.8	5.2	9.9	8.6	8.8	7.1	11.2	8.5	9.7	8.8	8.1	6.0	8.6	7.0	7.2	7.1	7.7	9.8	8.7	8.9	8.5	7.6	9.0	6.2	12.2	10.0	6.8
"Acid stomach"	9.0	9.6	12.1	12.2	13.8	10.1	11.2	10.9	12.2	8.7	11.9	10.0	13.8	12.8	10.7	9.5	9.9	8.7	9.8	11.5	8.5	8.5	13.4	11.2	11.2	13.6	10.7	13.2
Constipation	28.8	33.8	34.1	29.1	35.2	38.4	34.0	32.1	33.3	37.0	36.1	36.1	48.1	42.2	40.1	37.4	30.4	35.6	32.7	36.4	37.6	36.2	31.8	38.1	33.7	36.4	39.3	38.9
Habitual use of laxatives	25.7	34.0	28.0	19.8	30.0	31.3	28.1	26.9	27.8	28.0	27.3	26.6	30.2	31.5	23.9	30.7	24.0	30.5	27.2	29.2	31.2	28.2	27.6	31.8	22.2	34.8	32.4	32.5
Hemorrhoids	8.3	12.7	9.8	12.2	14.7	9.6	9.8	11.5	11.3	10.6	8.7	10.4	13.4	12.1	13.8	14.1	13.1	12.8	10.6	10.6	12.1	8.0	8.4	11.6	11.5	10.5	11.0	12.3
Tenderness in region of ap- pendix	2.1	3.9	—	—	2.9	4.5	3.7	3.2	4.7	—	2.4	3.5	—	1.6	3.1	2.6	3.2	3.4	2.7	2.8	4.3	—	—	—	—	—	—	—
<b>Circulatory:</b>																												
Enlarged heart	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Organic valvular	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Heart disease	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Functional heart	1.4	3.6	—	—	2.9	4.3	3.4	3.1	2.3	—	3.4	3.0	—	2.7	3.1	1.8	2.7	4.0	2.8	2.9	—	—	—	—	—	—	—	—
Murmur	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Arterial thickening— Moderate or marked	2.4	3.0	—	—	4.0	6.3	5.0	3.9	4.7	—	5.4	5.0	7.1	5.0	5.2	5.5	4.5	4.7	5.3	5.2	4.3	—	—	—	—	—	—	—
Slight	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Blood pressure— 20 and more mil- limeters above average	1.2	—	—	—	3.5	2.3	2.9	1.6	2.3	—	2.0	2.7	—	3.1	3.4	1.6	2.9	—	3.1	1.5	—	—	—	—	—	—	—	—
15 or more mil- limeters below average	4.2	9.0	5.2	7.0	9.8	7.3	8.2	9.6	5.5	9.7	9.7	9.0	13.4	12.5	8.3	11.2	10.6	11.4	10.7	8.0	12.1	9.0	9.7	6.4	10.1	8.7	5.6	5.6
Rapid pulse, over 90	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<b>Genito-urinary:</b>																												
Albuminuria— Moderate or marked	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Slight	20.3	16.3	18.6	15.2	15.1	13.8	15.8	16.8	20.1	15.0	15.5	15.1	12.8	13.0	12.9	14.9	10.7	10.5	14.6	14.2	13.9	17.6	14.4	15.5	11.9	16.0	14.3	10.3

Granular casts in urine.	6.8	6.1																						
Hyaline casts in urine.	12.7	9.7	11.4	11.3	4.5	6.8	6.1	6.9	6.6	4.5	4.6	5.4	1.9	5.0	4.6	6.9	4.9	6.0	4.0	6.2	6.8	5.3	5.4	4.7
Sugar in urine.	6.4	3.9						8.9	12.3	9.0	8.4	9.3	7.0	10.4	7.3	9.5	8.8	12.3	7.4	9.9	10.6	13.9	9.4	9.6
Pus in urine.	10.0	11.3	9.6	9.3	9.6	10.8	9.8	7.0	6.5	6.1	5.3	3.1	6.3	5.3	6.9	7.0	6.7	3.9	5.6	4.5	4.4	4.4	6.1	6.9
Enlarged prostate.	3.8	3.3			4.0	3.8	3.3	5.3	3.4		4.1	3.8	7.5	5.0	1.8	4.7	4.6	7.4	5.4	3.1	7.1	3.7	4.4	4.1
Frequent or painful urination.	10.8	7.8	12.7	5.8	11.2	8.8	7.6	10.0	8.3	10.1	9.0	8.8	8.6	6.2	6.4	10.4	8.4	9.4	7.4	7.2	8.2	5.9	10.7	8.9
Miscellaneous.																								7.5
Defective vision—																								
Uncorrected.	13.4	10.9	16.8	20.3	24.8	21.0	23.0	21.1	22.2	16.4	25.0	24.5	36.2	31.7	35.8	26.2	21.6	18.8	25.7	19.9	20.4	23.9	18.8	23.6
Corrected.	10.4	17.8	17.9	22.7	19.0	21.2	21.1	20.6	23.7	18.4	23.7	16.3	28.7	17.0	18.4	17.8	15.1	15.5	17.7	22.3	14.3	23.4	20.8	21.3
Defective hearing.	9.7	15.4	16.2	20.7	14.4	8.6	12.0	11.7	8.5	13.7	11.0	10.5	11.2	10.3	10.2	11.4	13.4	10.5	16.7	9.0	9.4	8.6	10.8	11.2
Wax in ears.	7.3	12.7	9.2	8.1	11.2	9.6	10.7	11.2	6.4	8.7	11.9	11.9	12.3	10.3	8.9	10.0	10.6	11.4	10.0	10.0	10.3	7.4	11.6	6.4
Enlarged thyroid, simple goiter.	5.1																							9.8
Adenitis.	3.5	2.7			2.6	2.5	4.1	2.3	1.7		2.9	3.2	4.9	3.8	4.3	3.9	4.6	2.0	3.4	3.5	3.5		4.0	2.5
Chronic skin affections.	4.9	8.7	8.1	8.7	10.1	9.8	9.1	8.3	8.6	6.3	10.3	11.8	10.4	8.6	7.3	8.7	8.0	7.0	10.4	10.0	11.7	11.2	9.4	8.6
Hernia.	1.4	3.0			3.7	5.6	5.1	5.0	3.9	4.1	4.1	5.6	3.7	4.8	6.1	6.1	6.0	4.7	4.7	4.8	4.3	6.2	7.8	
Weak inguinal rings.	3.8	5.4			4.9	5.8	4.5	4.5	4.3		4.6	5.1	4.3	7.1	8.3	5.5	4.7	3.7	4.8	3.4	4.3	3.4	5.1	
Varicose veins.	4.2	4.5			3.2	4.5	3.6	4.0	4.1		3.3	3.3	3.0	4.4	5.2	4.8	5.0	2.8	2.6	2.9	4.1	3.4	5.3	
Varicocoele.	8.0	7.2	6.9	7.0	8.6	6.6	8.5	9.1	6.0	6.8	9.3	9.7	16.0	7.4	11.2	8.8	8.7	7.7	7.0	9.3	9.1	9.0	8.9	
Flat feet.	9.0	12.0	11.0	14.5	11.8	12.4	12.4	15.9	17.0	9.2	12.4	15.1	28.1	23.1	31.8	16.0	13.9	14.4	15.2	13.0	27.7	24.5	16.8	
Spinal curvature.	3.1	2.7			3.7	4.5	3.4	4.1	2.9		3.1	3.0	3.2	4.2	2.1	3.2	7.0	4.0	4.3	2.9	3.5	3.5	3.2	
Backache.	8.0	6.9			6.6	5.6	5.2	3.8	5.5	2.9	3.1	2.0	1.6	6.2	2.1	3.2	7.0	7.0	5.3	4.3	3.8	3.2	3.8	
Nervousness.	4.5	6.0			7.1	7.1	6.3	6.0	5.7	4.8	8.2	7.6	10.1	9.0	5.0	6.7	5.4	6.7	7.2	6.1	5.7	6.9	6.0	
Abnormal reflexes.	5.9	8.4			3.8	6.0	5.3	5.1	5.8	4.2	5.8	4.6	7.9	3.7	4.9	6.7	6.3	6.1	4.9	4.7	6.1	5.4	6.8	
Dizziness.	10.4	9.3			6.3	9.6	7.1	8.4	9.8	7.2	9.3	5.2	6.7	4.9	8.4	7.1	7.4	8.2	8.7	6.4	8.0	7.9	6.3	
Insomnia.																								
Headache.	19.8	22.3	19.7	16.3	23.1	17.4	19.4	23.8	20.5	21.7	23.0	21.1	17.9	19.0	18.3	23.1	19.1	18.1	18.6	22.3	18.4	13.8	23.9	
Use of patent medicine.	10.4	9.6	8.1	6.4	12.4	8.6	11.6	9.9	8.8	10.6	7.6	11.8	6.7	9.8	8.3	9.0	8.5	8.7	9.6	11.1	12.1	11.2	9.1	7.8
																								7.0
																								10.7

In order to give a more precise expression of the differences in the rates of impairments in these occupations as a whole, compared with the population generally, the rank of the "business" group, in comparison with the 28 occupations, has been determined for each impairment. The rates for the "business" group, which is a very large one, are not particularly high or low, and so may be taken as typical of the examinations in general. It should be pointed out that the average age of workers in the trades represented in this study is about the same as that of persons in the "business" group.

The rank was determined prior to applying the criterion just discussed, in order to avoid having an unequal number of items in the different arrays. Table 3 gives also the "business" rate and the average occupational rate (median after applying criterion), with the ratio of the median rate to the "business" rate.

TABLE 3.—Rank of "business" in comparison with the 28 occupations<sup>1</sup> for "field" data

Nature of impairment, disease, or symptom	Rank <sup>1</sup>	Ratio of occupational to business rate (business=100)	Rate	
			Business	Occupational <sup>2</sup>
Carious teeth, septic roots.....	28	147	12.1	17.8
Pyorrhea (definite).....	27	144	4.8	6.9
Slightly infected gums.....	26	125	10.4	13.0
Backache.....	26	149	8.7	5.5
Missing teeth.....	25	122	6.0	7.3
Albuminuria—slight.....	25	111	14.1	15.7
Habitual use of laxatives.....	24	109	25.8	28.1
Arterial thickening—slight.....	23	123	7.3	9.0
Frequent colds.....	23	117	14.9	17.4
Constipation.....	23	108	32.8	35.9
Fus in urine.....	23	112	9.4	10.5
Insomnia.....	22	130	1.0	1.3
Abnormal reflexes.....	22	112	5.2	5.8
Defective hearing.....	22	118	9.2	10.9
Dizziness.....	22	112	6.7	7.5
Bronchitis, emphysema.....	22	114	1.4	1.6
Casts, hyaline, in urine.....	22	109	8.8	9.6
Defective vision, uncorrected.....	21	116	20.1	23.3
Adenitis.....	20	125	2.8	3.5
Weak inguinal rings.....	20	109	4.3	4.7
Casts, granular, in urine.....	20	120	5.0	6.0
Lung pathology not suggestive of tuberculosis.....	20	121	3.9	4.6
Enlarged heart.....	19	119	2.1	2.5
Hernia.....	19	104	4.8	5.0
Frequent or painful urination.....	19	109	8.0	8.7
Wax in ears.....	19	104	9.6	10.0
Arterial thickening—moderate and marked.....	18	121	1.9	2.3
Gastric disturbances.....	18	109	7.8	8.5
Albuminuria—marked amount.....	18	111	1.8	2.0
Varicose veins.....	18	114	3.7	4.2
Tuberculosis—suspected or actual.....	18	109	1.1	1.2
Organic valvular heart conditions.....	18	104	2.8	2.9
"Acid stomach".....	18	106	10.5	11.1
Deflected septum, marked.....	18	102	4.1	4.3
Tenderness in region of appendix.....	17	103	3.1	3.2
Functional murmur.....	16	102	4.9	5.0
Sugar in urine, trace or definite.....	15	102	5.7	5.8
High blood pressure (20 mm. and more above average).....	14	98	5.5	5.3
Varicocele.....	14	99	8.1	8.0
Enlarged thyroid, simple goiter.....	13	100	2.4	2.4
Enlarged, diseased, or buried tonsils.....	13	98	27.6	27.6

<sup>1</sup> Prior to applying 50  $\mu$ /pq criterion.

<sup>2</sup> Median rate after applying 50  $\mu$ /pq criterion.

TABLE 3.—Rank of "business" in comparison with the 28 occupations for "field" data—Continued

Nature of impairment, disease, or symptom	Rank	Ratio of occupational to business rate (business=100)	Rate	
			Business	Occupational
Nasopharyngitis.....	13	98	8.5	8.3
Hemorrhoids.....	13	96	12.0	11.5
Hypertrophic rhinitis (enlarged turbinates).....	12	97	20.7	20.1
Chronic skin affections.....	12	95	9.7	9.2
Nervousness.....	11	97	6.9	6.7
Use of patent medicines.....	11	96	10.0	9.6
Rapid pulse.....	11	88	6.0	5.3
Headache.....	10	92	21.3	19.6
Deflected septum, slight.....	10	97	25.0	24.2
Enlarged prostate.....	10	85	4.8	4.1
Heavy dentistry (X ray advised).....	7	91	34.7	31.5
Low specific gravity.....	5	82	2.8	2.3
Low blood pressure (15 mm. or more below average).....	2	85	15.7	13.4
Defective vision, corrected.....	1	62	29.6	18.4

It will be found that for carious teeth, for instance, the "business" group as a whole ranks twenty-eighth. This means that all but one of the 28 occupations under consideration had higher rates for carious teeth than the average rate for the "business" group. In other words, the impairments listed in the upper part of the table (down to rank 15) are those for which the rates among the industrially employed were above average. In the lower part of the table will be found the impairments for which the contrary was true.

A very clear impression is left by this table, i. e., that excessively high impairment rates in a few of these occupations which involve definite hazards are not sufficient to account for the generally higher rates which are found to be characteristic of the industrial workers as a whole when compared with the other persons analyzed. There are more than 10 findings and symptoms for which the rates in nearly every occupation are above the average for "business." In other words, one must come to the conclusion that where there is a marked difference in health and physical condition between these groups it is the result of various factors associated with social, educational, or economic causes.

For the purpose of an adequate comparison with the impairment rates of the "business" group, a ranking of the occupations according to the magnitude of the rates was desirable. For economy of space, comparison is limited to those occupations which had rates definitely above the "business" average for a given impairment. To determine this question, again, an arbitrary standard was required. A standard based directly on the probable error involved too much labor and was not considered satisfactory, since it would omit from consideration a large number of occupations which, on the average, were significantly

above the "business" level.<sup>5</sup> The method chosen was very simple and, if arbitrary, had the advantage of being purely objective. After exclusion of rates which did not meet the criterion of size of occupational groups, the remaining rates were ranked for each impairment according to magnitude. The "business" rate was then inserted in numerical order in this array. The occupations falling below the "business" rate were counted, and then the same number immediately above the "business" rate were eliminated, together with those below it. All higher than these were included in the table. This method, of course, was based on the assumption that in a chance distribution there will be as many items above the average as below it. Again it must be stressed that no definite implication is involved that all of the occupations remaining after this standard is applied are significantly high, or that none left out is significantly high; but that approximately the number of occupations included in the table are significantly above the "business" level.

In the case of several of the smaller occupational groups it is realized that the rates are somewhat uncertain. For the same reason there is a tendency for some of the occupations representing the smaller groups to appear at the top simply as a result of chance fluctuation. The rates at the top are to be taken as somewhat exaggerated. However, the general tendencies of the data appear to be unmistakable.

A careful consideration of Table 4 will indicate which occupations explain the excess among industrial workers as compared with the "business" average, but the impression to be derived will undoubtedly be that previously stated, viz, an excess for the industrial worker generally rather than outstandingly high rates for particular occupations. However, some differences for specific impairments are of interest.

For uncorrected defective vision, three occupations are outstanding—garment workers, cutters, and tailors. It may be remarked that the same is true when corrected and uncorrected vision are combined.

For defective hearing a very interesting result is found: The first six occupations in the list are those in which noise is a definite factor. This is particularly true for blacksmiths, who have a rate

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<sup>5</sup> This point may be clearly explained by reference to a condition such as carious teeth. In that case 8 occupations showed rates in excess of that of "business" by more than four times the probable error; but, as a matter of fact, many of the others must have been significantly higher, because 27 occupations were above the "business" level and only 1 below. We can not say that all of those 27 were significantly higher, but we know that most of them were. In other words, if we think of the occupations as a series, rather than a single one, it becomes necessary to consider many which could not be shown by reference to the probable error to be significantly different. Moreover, the probable error ceases to have a precise meaning when the test is applied to 28 different items rather than one. For instance, in the case of the highest rate for a given impairment, we have selected a rate at one end of the distribution and are most likely dealing with a chance that would occur only once in twenty-eight times. A positive deviation of three times the probable error would be expected to occur from chance alone about once in twenty-eight times. Thus the precise meaning of the probable error is lost.

very much in excess of that in any other occupation, and nearly three times that of the "business" average.

For carious teeth and pyorrhea, painters have the highest rates, a fact which is possibly associated with lead poisoning.

For hernia, it is observable that none of the occupations requiring arduous labor is above the "business" level—an indication of the factor of selection which is present.

For constipation, it is observable that chiefly the sedentary occupations appear at the top of the table.

TABLE 4.—*Ranking of occupations which have rates significantly above those of the "business" group*

Occupation	Impairment rate	Ratio to average	Number of persons
RESPIRATORY			
Lung pathology not suggestive of tuberculosis			
Cutters (cloth).....	7.3	159	327
Tailors.....	7.1	154	1,053
Miners.....	6.6	143	288
Garment operatives.....	6.3	137	268
Waiters and hotel servants.....	6.0	130	282
Painters.....	5.8	126	623
Butchers.....	5.7	124	564
Printers.....	5.4	117	977
Telephone and telegraph operators.....	5.4	117	410
Woodworkers.....	5.1	111	396
Factory workers (unclassified, light).....	4.6	100	611
Metal workers.....	4.6	100	347
Business.....	3.8	83	41,667
Bronchitis, emphysema:			
Tailors.....	3.2	200	1,053
Butchers.....	2.8	175	564
Plumbers, pipe and steam fitters.....	2.1	131	829
Factory workers (unclassified, light).....	2.0	125	611
Firemen, police.....	1.8	113	440
Carpenters.....	1.8	113	1,673
Business.....	1.4	88	41,667
Deflected septum, moderate or marked:			
Street railway employees.....	5.9	140	287
Chauffeurs.....	5.7	136	595
Painters.....	5.5	131	623
Plumbers, pipe and steam fitters.....	5.2	124	829
Business.....	4.1	98	41,667
Frequent colds:			
Iron workers.....	21.4	123	332
Bricklayers.....	21.1	121	296
Chauffeurs.....	20.5	118	595
Factory workers (unclassified, light).....	19.4	111	611
Metal workers.....	19.3	111	347
Woodworkers.....	18.9	109	396
Telephone and telegraph operators.....	18.8	108	410
Textile mill operators.....	18.8	108	207
Electricians.....	18.5	106	1,014
Cutters (cloth).....	18.3	105	327
Blacksmiths.....	18.0	103	172
Shoe factory operatives.....	17.7	102	532
Butchers.....	17.5	101	564
Miners.....	17.4	100	288
Machinists (office, store).....	17.4	100	3,070
Plumbers, pipe and steam fitters.....	17.1	98	829
Business.....	14.9	86	41,667

#### DIGESTIVE—TEETH

Carious teeth, septic roots:			
Painters.....	23.4	131	623
Bricklayers.....	23.2	130	298
Domestic help.....	22.9	129	188
Blacksmiths.....	21.5	121	172
Firemen (stationary).....	21.1	119	617
Carpenters.....	21.0	118	1,673
Ironworkers.....	20.5	115	332
Plumbers, pipe and steam fitters.....	20.4	115	829

TABLE 4.—*Ranking of occupations which have rates significantly above those of the "business" group—Continued*

Occupation	Impairment rate	Ratio to average	Number of persons
DIGESTIVE—TEETH—Continued			
<b>Carious teeth, septic roots—Continued.</b>			
Factory workers (unclassified, light)	20.0	112	611
Waiters and hotel servants	19.1	107	282
Foundry workers	19.1	107	173
Garment operatives	18.3	103	268
Chauffeurs	18.3	103	595
Woodworkers	17.9	101	396
Miners	17.7	99	288
Butchers	17.4	98	564
Shoe-factory operatives	17.3	97	532
Textile-mill operators	16.9	95	207
Street-railway employees	16.7	94	287
Machinists (office, store)	16.1	90	3,070
Tailors	15.9	89	1,053
Electricians	15.0	84	1,014
Metal workers	15.0	84	347
Printers	14.9	84	977
Cutters (cloth)	14.7	83	327
Barbers	13.3	75	721
Business	12.1	68	41,667
<b>Missing teeth:</b>			
Cutters (cloth)	10.1	138	327
Carpenters	9.9	126	1,673
Domestic help	9.6	132	188
Street-railway employees	8.4	115	247
Painters	8.3	114	623
Factory workers (unclassified, light)	8.2	112	611
Firemen (stationary)	8.1	111	617
Bricklayers	8.1	111	248
Printers	7.9	108	977
Shoe-factory operatives	7.5	103	532
Garment operatives	7.5	103	268
Plumbers, pipe and steam fitters	7.4	101	829
Chauffeurs	7.4	101	595
Electricians	7.3	100	1,014
Firemen, police	7.3	100	440
Miners	7.3	100	288
Ironworkers	7.2	99	332
Business	6.0	82	41,667
<b>Pyorrhea (definite):</b>			
Painters	11.1	161	623
Street-railway employees	10.1	146	287
Waiters and hotel servants	9.9	143	282
Firemen (stationary)	9.4	136	617
Carpenters	9.3	135	1,673
Garment operatives	9.0	130	268
Tailors	8.3	120	1,053
Plumbers, pipe and steam fitters	8.0	116	829
Ironworkers	7.8	113	332
Miners	7.3	106	288
Butchers	7.3	106	564
Barbers	7.2	104	721
Bricklayers	7.0	101	298
Shoe-factory operatives	6.8	99	532
Domestic help	6.4	93	188
Machinists (office, store)	6.3	91	3,070
Telephone and telegraph operators	6.1	88	410
Chauffeurs	6.1	88	595
Factory workers (unclassified, light)	6.1	88	611
Woodworkers	5.8	84	396
Metal workers	5.8	84	347
Textile-mill operators	5.3	77	207
Printers	5.2	75	977
Business	4.8	70	41,667
<b>Slightly infected gums:</b>			
Tailors	21.6	166	1,053
Garment operatives	17.5	135	268
Blacksmiths	16.3	125	172
Metal workers	16.1	124	347
Bricklayers	15.8	122	298
Waiters and hotel servants	14.5	112	282
Domestic help	14.4	111	188
Plumbers, pipe and steam fitters	14.2	109	829
Factory workers (unclassified, light)	14.1	108	611
Chauffeurs	13.8	106	595
Ironworkers	13.6	105	332
Painters	13.6	105	623
Printers	13.5	104	977
Cutters (cloth)	13.1	101	327

**TABLE 4.—Ranking of occupations which have rates significantly above those of the "business" group—Continued**

Occupation	Impairment rate	Ratio to average	Number of persons
<b>DIGESTIVE—TEETH—Continued</b>			
<b>Slightly infected gums—Continued.</b>			
Carpenters.....	12.9	99	1,673
Barbers.....	12.6	97	721
Street-railway employees.....	12.5	96	287
Butchers.....	12.4	95	564
Firemen, police.....	12.3	95	440
Firemen (stationary).....	12.2	94	617
Foundry workers.....	12.1	93	173
Business.....	10.4	80	41,667
<b>DIGESTIVE—OTHER</b>			
<b>Gastric disturbances:</b>			
Street railway employees.....	12.2	144	287
Fireman (stationary).....	11.2	132	617
Telephone and telegraph operators.....	10.0	118	410
Blacksmiths.....	9.9	116	172
Plumbers, pipe and steam fitters.....	9.8	115	829
Business.....	7.8	92	41,667
<b>"Acid stomach":</b>			
Metal workers.....	13.8	124	347
Garment operatives.....	13.8	124	268
Street railway employees.....	13.6	123	287
Chauffeurs.....	13.4	121	595
Firemen, police.....	13.2	119	440
Tailors.....	12.8	115	1,053
Business.....	10.5	95	41,667
<b>Constipation:</b>			
Garment operatives.....	48.1	134	268
Tailors.....	42.2	118	1,053
Cutters.....	40.1	112	327
Street railway employees.....	39.4	110	287
Telephone and telegraph operators.....	39.3	109	410
Firemen, police.....	38.9	108	440
Woodworkers.....	38.4	107	896
Barbers.....	38.1	106	721
Waiters and hotel servants.....	37.6	105	282
Painters.....	37.4	104	623
Factory workers (unclassified, light).....	37.0	103	611
Electricians.....	36.4	101	1,014
Domestic help.....	36.2	101	188
Printers.....	36.1	101	677
Iron workers.....	35.8	100	332
Bricklayers.....	35.6	99	298
Business.....	32.8	91	41,667
<b>Habitual use of laxatives.</b>			
Street railway employees.....	34.8	124	287
Iron workers.....	34.0	121	332
Firemen, police.....	32.5	116	440
Telephone and telegraph operators.....	32.4	115	410
Barbers.....	31.8	113	721
Tailors.....	31.5	112	1,053
Woodworkers.....	31.3	111	396
Waiters and hotel servants.....	31.2	111	282
Painters.....	30.7	109	623
Bricklayers.....	30.5	109	268
Garment operatives.....	30.2	107	268
Metal workers.....	30.0	107	347
Electricians.....	29.2	104	1,014
Domestic help.....	28.2	100	188
Machinists (office, store).....	28.1	100	8,070
Textile mill operators.....	28.0	100	207
Shoe factory operatives.....	27.8	99	532
Chauffeurs.....	27.6	98	595
Business.....	25.8	92	41,667
<b>CIRCULATORY</b>			
<b>Enlarged heart:</b>			
Wood workers.....	3.5	140	396
Iron workers.....	3.0	120	332
Carpenters.....	3.0	120	1,673
Butchers.....	3.0	120	564
Shoe factory operatives.....	2.8	112	532
Firemen, police.....	2.7	108	440
Business.....	2.1	84	41,667



TABLE 4.—*Ranking of occupations which have rates significantly above those of the "business" group—Continued*

Occupation	Impairment rate	Ratio to average	Number of persons
<b>CIRCULATORY—Continued</b>			
<b>Organic valvular heart disease:</b>			
Street railway employees.....	4.9	109	287
Butchers.....	4.3	148	564
Woodworkers.....	4.3	148	396
Bricklayers.....	4.0	138	208
Iron workers.....	3.6	124	332
Business.....	2.8	97	41,667
<b>Functional murmur:</b>			
Chauffeurs.....	8.1	162	595
Garment operatives.....	7.1	142	298
Woodworkers.....	6.3	126	396
Firemen, police.....	6.1	122	440
Business.....	4.9	98	41,667
<b>Arterial thickening, moderate or marked:</b>			
Metal workers.....	3.5	152	347
Cutters (cloth).....	3.4	148	327
Plumbers, pipe and steam fitters.....	3.1	135	829
Tailors.....	3.1	135	1,053
Carpenters.....	2.9	126	1,673
Business.....	1.9	83	41,667
<b>Arterial thickening, slight:</b>			
Garment operatives.....	13.4	149	268
Tailors.....	12.5	139	1,053
Waiters.....	12.1	134	282
Bricklayers.....	11.4	127	296
Painters.....	11.2	124	623
Plumbers, pipe and steam fitters.....	10.7	119	829
Carpenters.....	10.6	118	1,673
Butchers.....	10.1	112	564
Metal workers.....	9.8	109	347
Textile mill operators.....	9.7	108	207
Factory workers (unclassified, light).....	9.7	108	611
Chauffeurs.....	9.7	108	595
Firemen (stationary).....	9.6	107	617
Iron workers.....	9.0	100	332
Domestic help.....	9.0	100	188
Business.....	7.3	81	41,667
<b>Rapid pulse, over 90</b>			
Waiters and hotel servants.....	12.1	228	282
Garment operatives.....	10.4	196	268
Tailors.....	8.7	164	1,053
Butchers.....	8.0	151	564
Cutters (cloth).....	7.6	143	327
Shoe-factory operatives.....	7.0	132	532
Chauffeurs.....	6.4	121	595
Woodworkers.....	6.3	119	396
Business.....	6.0	113	41,667
<b>GENITO-URINARY</b>			
<b>Granular casts in urine:</b>			
Firemen (stationary).....	6.0	115	582
Painters.....	6.9	116	582
Waiters and hotel servants.....	6.8	113	264
Telephone and telegraph operators.....	6.8	113	384
Miners.....	6.8	113	251
Woodworkers.....	6.8	113	370
Shoe-factory operatives.....	6.6	110	487
Firemen, police.....	6.2	103	402
Business.....	5.0	83	38,176
<b>Hyaline casts in urine:</b>			
Domestic help.....	13.9	145	165
Miners.....	12.7	132	251
Shoe-factory operatives.....	12.3	128	487
Bricklayers.....	12.3	128	284
Foundry workers.....	11.4	119	167
Blacksmiths.....	11.3	118	151
Waiters and hotel servants.....	10.6	110	264
Tailors.....	10.4	108	968
Butchers.....	10.0	104	512
Street-railway employees.....	9.9	103	262
Electricians.....	9.9	103	949
Iron workers.....	9.7	101	800
Telephone and telegraph operators.....	9.6	100	384
Barbers.....	9.6	100	669
Painters.....	9.5	99	582
Business.....	8.8	92	38,176

**TABLE 4.—Ranking of occupations which have rates significantly above those of the "business" group—Continued**

Occupation	Impairment rate	Ratio to average	Number of persons
<b>GENITO-URINARY—Continued</b>			
<b>Pus in urine:</b>			
Domestic help.....	14 5	138	165
Waiters and hotel servants.....	14 0	133	264
Bricklayers.....	13 4	128	284
Shoe-factory operatives.....	12 7	121	487
Firemen, police.....	11 4	109	402
Ironworkers.....	11 3	108	309
Firemen (stationary).....	11 3	108	582
Barbers.....	11 2	107	669
Cutters (cloth).....	11 2	107	303
Street-railway employees.....	11 1	106	262
Woodworkers.....	10 8	103	370
Telephone and telegraph operators.....	10 7	102	384
Chauffeurs.....	10 7	102	552
Plumbers, pipe and steam fitters.....	10 6	101	752
Garment operatives.....	10 5	100	257
Painters.....	10 5	100	582
Business.....	9 4	90	38, 176
<b>Frequent or painful urination:</b>			
Foundry workers.....	12 7	146	173
Street-railway employees.....	12 5	144	287
Metal workers.....	11 2	120	347
Miners.....	10 8	124	288
Chauffeurs.....	10 7	123	795
Telephone and telegraph operators.....	10 5	121	410
Painters.....	10 4	120	623
Textile-mill operators.....	10 1	116	207
Business.....	8 0	92	41, 667
<b>MISCELLANEOUS</b>			
<b>Defective vision, uncorrected:</b>			
Garment operatives.....	36 2	155	268
Cutters (cloth).....	35 8	154	327
Tailors.....	34 7	149	1, 053
Butchers.....	29 8	128	564
Waiters and hotel servants.....	29 4	126	282
Painters.....	26 2	112	623
Plumbers, pipe and steam fitters.....	25 7	110	829
Factory workers (unclassified, light).....	25 0	107	611
Metal workers.....	24 8	106	347
Printers.....	24 5	105	977
Firemen, police.....	23 9	103	440
Domestic help.....	23 9	103	188
Business.....	20 1	86	41, 667
<b>Defective hearing:</b>			
Blacksmiths.....	29 7	272	172
Carpenters.....	17 2	138	1, 673
Foundry workers.....	16 2	149	173
Ironworkers.....	15 4	141	332
Metal workers.....	14 4	132	347
Textile-mill operators.....	13 5	124	207
Plumbers, pipe and steam fitters.....	13 4	123	829
Bricklayers.....	13 1	120	298
Cutters (cloth).....	13 1	120	327
Machinists (office, store).....	12 0	110	3, 070
Firemen (stationary).....	11 7	107	617
Garment operatives.....	11 2	103	268
Telephone and telegraph operators.....	11 2	103	410
Factory workers (unclassified, light).....	11 0	101	611
Business.....	9 2	84	41, 667
<b>Wax in ears:</b>			
Ironworkers.....	12 7	127	332
Garment operatives.....	12 3	123	268
Printers.....	11 9	119	977
Factory workers (unclassified, light).....	11 9	119	611
Chauffeurs.....	11 6	116	595
Bricklayers.....	11 4	114	298
Firemen (stationary).....	11 2	112	617
Metal workers.....	11 2	112	847
Business.....	9 6	96	41, 667
<b>Adenitis:</b>			
Painters.....	5 9	169	623
Printers.....	5 2	149	977
Garment operatives.....	4 9	140	268
Carpenters.....	4 6	131	1, 673
Cutters (cloth).....	4 3	123	327

TABLE 4.—*Ranking of occupations which have rates significantly above those of the "business" group—Continued*

Occupation	Impairment rate	Ratio to average	Number of persons
MISCELLANEOUS—Continued			
<b>Adentitis—Continued.</b>			
Street railway employees.....	4.2	120	287
Machinists (office, store).....	4.1	117	3,070
Chauffeurs.....	4.0	114	595
Business.....	2.8	80	41,667
<b>Hernia.</b>			
Barbers.....	7.8	156	721
Butchers.....	7.6	152	564
Waiters and hotel servants.....	7.1	142	282
Cutters (cloth).....	6.4	128	327
Business.....	4.8	96	41,667
<b>Weak inguinal rings.</b>			
Garment operatives.....	9.3	198	268
Cutters (cloth).....	8.3	177	327
Tailors.....	7.1	151	1,053
Butchers.....	6.9	147	564
Painters.....	5.5	117	623
Iron workers.....	5.4	115	332
Barbers.....	5.4	115	721
Chauffeurs.....	5.4	115	595
Printers.....	5.1	109	977
Metal workers.....	4.9	104	347
Plumbers, pipe and steam fitters.....	4.8	102	829
Carpenters.....	4.7	100	1,073
Business.....	4.3	92	41,667
<b>Varicose veins.</b>			
Waiters and hotel servants.....	6.4	152	282
Street railway employees.....	6.3	150	287
Firemen, police.....	5.9	140	440
Painters.....	5.8	138	623
Butchers.....	5.3	120	564
Business.....	3.7	88	41,667
<b>Backache.</b>			
Miners.....	8.0	145	288
Carpenters.....	7.3	133	1,673
Bricklayers.....	7.0	127	298
Painters.....	6.9	125	623
Iron workers.....	6.9	125	332
Garment operatives.....	6.7	122	268
Metal workers.....	6.6	120	347
Tailors.....	6.2	113	1,053
Factory workers (unclassified, light).....	6.1	111	611
Firemen (stationary).....	5.8	105	617
Butchers.....	5.7	104	564
Woodworkers.....	5.6	102	396
Shoe factory operatives.....	5.5	100	532
Plumbers, pipe and steam fitters.....	5.3	96	829
Machinists (office, store).....	5.2	95	3,070
Telephone and telegraph operators.....	5.1	93	410
Chauffeurs.....	4.7	85	595
Electricians.....	4.5	82	1,014
Business.....	3.7	87	41,667
<b>Abnormal reflexes.</b>			
Telephone and telegraph operators.....	9.0	155	410
Street railway employees.....	8.7	150	287
Iron workers.....	8.4	145	332
Garment operatives.....	7.9	136	268
Barbers.....	6.8	117	721
Painters.....	6.7	115	623
Carpenters.....	6.3	109	1,673
Textile mill operators.....	6.2	107	267
Waiters and hotel servants.....	6.1	105	282
Bricklayers.....	6.1	105	298
Woodworkers.....	6.0	104	396
Business.....	5.2	90	41,667
<b>Dizziness.</b>			
Miners.....	10.4	139	288
Shoe factory operatives.....	9.8	131	532
Woodworkers.....	9.6	128	396
Firemen (stationary).....	9.4	125	617
Factory workers (unclassified, light).....	9.3	124	611
Iron workers.....	9.3	124	332
Painters.....	8.8	117	623
Electricians.....	8.7	116	1,014
Plumbers, pipe and steam fitters.....	8.2	109	829
Domestic help.....	8.0	107	188
Chauffeurs.....	7.9	105	595
Business.....	6.7	89	41,667

For varicose veins, on the contrary, the occupations above the "business" level appear to be those of workers who are customarily on their feet.

Backache may not be a particularly important symptom, but it is of interest to note that the rate is highest among miners, who usually work in a stooping position, and also among other persons doing arduous work.

The rates for flat feet are not included, because data for the "business" group were not available for this condition. Reference to Table 2 will show, however, that the rates for certain occupations are excessive, particularly garment workers, waiters, cutters, domestic help, tailors, barbers, and butchers.

In addition to manifest variations in the prevalence of specific impairments in different occupations, there is the broader problem of possible differences in general physical condition as indicated by the impairment rates as a whole. Unfortunately such comparisons are difficult, because of the high frequency of relatively unimportant conditions. The total number of impairments per person is therefore of little meaning. It is equally impossible to select any group of serious impairments, since so much difference of opinion must exist in regard to any classification used, and since there is usually no information as to the seriousness of a condition as recorded for a particular individual. It seems preferable to make the comparison purely on the basis of an examination of the rates for individual conditions as given in Tables 2 and 3.

In this connection it is necessary to remember that there will be more variation in the rates for occupations with small populations, and therefore a larger percentage of such occupations will show high rates, quite apart from any true differences among the occupations. There will also be more relative variation in the rates for the less common conditions. Furthermore, any differences which may be found will be subject to much difficulty of interpretation, because of the pronounced effect of selection. Persons with certain impairments tend to drift into occupations where the impairment is not a definite handicap.

An examination of Tables 2 and 3 in the light of these comments gives the unmistakable impression that, aside from the few impairments considered above, the general level of prevalence is about the same for all of the occupations. This fact is again an indication that social, economic, or educational differences are mainly responsible for the variations in the prevalence of impairments noted in this and the preceding study. These distinctions are apparently common to all the occupational groups which have been analyzed. In the case of a few of the occupations, it is suggested that a tendency toward higher or lower rates than the average may reflect selection or the

presence of differing social or economic levels within the skilled trade group as a whole.

Generally speaking, the occupational groups included in this study were not large enough to permit an adequate analysis of the rates in specific age groups. A preliminary analysis brought out the fact that the age curve of the impairments for a particular occupation agrees quite closely with that for the occupations generally. It was also evident that the occupational differences brought out in the previous discussions are present at each age.

One element of the examination which has been given little consideration in this paper is the blood pressure. In preparing the punch cards the actual blood pressure of the individual was not recorded. Instead, his deviation in millimeters from a standard for persons of his age was punched in broad groups, viz, 25 and more millimeters under the average, 15 to 24 under, 14 under to 19 above, 20 to 39 above, 40 to 59 above, 60 and more above. It is desirable to determine from the resulting distribution of deviations what the average blood pressure is for each occupation. An estimated average<sup>a</sup> based on the frequency distribution of the deviations was secured for each occupation. Table 5 gives the averages obtained in this way for each of the 28 occupations, and for the "skilled trade" and "business" groups. It is found that the variation in these averages from occupation to occupation is remarkably slight. Domestic help has the highest average (129.2) and metal workers the lowest (125.2). The "business" average is lower than most of the individual occupations, but again the difference is slight:

TABLE 5.—Average systolic blood pressure<sup>a</sup> (20–59) by occupation

Occupation	Milli- meters	Occupation	Milli- meters
Domestic help.....	129.2	Plumbers, pipe and steam fitters.....	126.9
Blacksmiths.....	129.1	Garment operatives.....	126.9
Firemen, police.....	128.5	Barbers.....	126.9
Factory workers (unclassified, light).....	128.5	Electricians.....	126.9
Waiters and hotel servants.....	128.5	Woodworkers.....	126.8
Firemen (stationary).....	128.4	Bricklayers.....	126.7
Shoe factory operatives.....	128.1	Miners.....	126.7
Painters.....	127.9	Telephone and telegraph operators.....	126.6
Textile mill operators.....	127.9	Tailors.....	126.5
Chauffeurs.....	127.6	Cutlers (cloth).....	126.4
Machinists (office, store).....	127.3	Carpenters.....	126.4
Butchers.....	127.2	Street-railway employees.....	126.0
Foundry workers.....	127.2	Metal workers.....	125.2
Iron workers.....	127.1	Skilled trade.....	127.8
Printers.....	127.0	Business.....	126.4

<sup>a</sup> Obtained as described in footnote 6.

<sup>a</sup> It is not possible to obtain a direct average of the deviations. However, if the distribution of deviations for a particular occupation is reduced to percentages, and these percentages are cumulated, it will be possible to determine the percentage of persons down to 15 millimeters below, and the percentage of persons up to 20 millimeters above. By plotting these two percentages on "probability" paper, connecting the two points with a straight line, and reading off the deviation at the point where this line crosses the 50 per cent line, it is possible to obtain an average deviation. If this deviation is then added algebraically to the standard which was originally subtracted in the case of each individual, an average blood pressure is obtained. It should be noted that this average more nearly approaches the median blood pressure than the arithmetic mean, but it seems quite adequate for our purposes.

For the larger occupations the same averages have been determined for three broad age groups. They are found to increase with age in the expected way, but the differences among the occupations are quite insignificant.

TABLE 6.—Average systolic blood pressure <sup>1</sup> by age for 15 occupations

Occupations	20-34	35-44	45-59
Firemen, police.....	123.7	127.7	136.2
Factory workers (unclassified, light).....	126.0	125.1	135.3
Firemen (stationary).....	125.3	127.0	133.9
Shoe-factory operatives.....	123.4	127.0	134.6
Painters.....	124.9	125.1	134.6
Chauffeurs.....	123.1	125.5	139.5
Machinists (office, store).....	124.6	126.0	133.3
Butchers.....	124.1	126.1	131.0
Printers.....	124.5	124.0	134.5
Plumbers, pipe and steam fitters.....	123.1	125.4	133.4
Barbers.....	122.1	125.4	133.0
Electricians.....	123.6	125.1	134.0
Telephone and telegraph operators.....	123.6	123.4	132.1
Tailors.....	121.8	125.4	134.2
Carpenters.....	125.0	121.8	131.3
Skilled trade.....	123.9	125.7	132.7
Business.....	122.7	125.0	132.1

<sup>1</sup> Obtained as described in footnote 6, p. 18.

#### SUMMARY

In a previous study it was shown that the rates of physical impairment in a group of skilled workers tended to be definitely higher than in other groups (professional, business, agricultural). The present study was undertaken to determine, in so far as possible, whether the effects of specific occupational factors are sufficient to account for these higher rates. The data employed were the medical examinations furnished to white, native-born, male policyholders as a part of the health service of life-insurance companies. The examinations were conducted by the Life Extension Institute, and the analysis is limited to the first examinations made on each individual and to those made outside of the "head" offices of the Institute. In all, 17,294 persons in 28 specific occupations were included.

It was found that the higher rates characteristic of the industrial workers were not to be explained, except in a few instances, as being due to the hazard of any specific occupation. On the contrary, these higher rates seemed to be the result of various factors associated with social, educational, or economic causes, and to be present, in more or less degree, in every specific occupation studied. Differences among the industrial occupations did not appear to be of great moment, and when found seemed to reflect either selection (the tendency of workers with certain impairments to drift into occupations where such impairments would not serve as a handicap) or the presence within the industrial occupations themselves of social or economic differences.

APPENDIX TABLE 1.—Number of impairments by cause in each specific occupation

## FIELD DATA

	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Machinists (office, store)	Firemen (stationary)	Shoe factory operatives	Textile mill operators	Factory workers (unclassified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipes and steam fitters	Electricians	Waiters and hotel servants	Domestic help	Chauveteurs	Barbers	Butchers	Street railway employees	Telephone and telegraph operators	Firemen, police
Respiratory:																												
Tuberculosis, actual or suspected	2	2	2	2	6	7	56	5	7	5	8	15	5	15	4	3	20	3	9	8	0	1	11	6	5	4	6	5
Lung pathology not suggestive of tuberculosis	19	14	8	6	16	20	99	21	22	5	28	53	17	75	24	36	70	10	31	43	17	7	25	25	32	13	22	8
Bronchitis, emphysema	4	5	3	6	8	5	38	10	9	2	12	16	6	34	7	8	30	7	17	18	2	3	6	9	16	5	6	8
Enlarged, diseased, or buried tonsils	74	84	46	38	97	106	784	152	128	50	177	313	130	375	117	183	411	75	240	307	91	50	184	196	180	77	113	114
Deflected septum—																												
Moderate or marked	5	15	8	8	17	20	106	23	17	8	28	30	13	43	12	34	77	9	43	40	12	8	34	13	24	17	14	18
Slight	69	62	33	38	81	89	697	151	106	44	146	278	98	324	102	162	400	66	186	260	79	36	166	177	138	70	97	117
Nasopharyngitis	20	31	10	8	28	41	282	43	47	9	61	80	31	97	31	41	126	23	96	83	17	12	41	66	51	23	45	37
Hypertrophic rhinitis (enlarged turbinates)	41	66	33	34	74	90	558	117	82	35	126	203	101	299	103	134	341	51	175	199	60	33	172	135	113	62	83	86
Frequent colds	50	71	25	31	67	75	533	104	94	39	118	167	43	144	60	102	281	63	142	189	34	26	122	76	99	42	77	70
Digestive:																												
Teeth—																												
Carious teeth, septic roots	51	68	33	37	52	71	494	130	92	35	122	146	49	168	48	146	352	69	169	152	54	43	109	96	98	48	48	58
Heavy dentistry (X ray advised)	70	111	54	46	104	96	965	207	155	58	231	320	109	354	100	197	470	81	262	338	103	42	220	211	194	101	130	156
Missing teeth	21	24	12	13	21	24	218	50	40	12	50	77	20	75	33	52	166	24	61	74	17	18	44	29	33	24	23	32
Pyorrhea (definite)	21	26	19	14	20	23	193	58	35	11	37	51	24	87	16	69	156	21	66	46	28	12	36	52	41	29	25	21
Slightly infected gums	30	45	21	28	56	38	342	75	63	24	86	132	47	228	43	85	215	47	118	95	41	27	82	91	70	36	30	54

Other—	14	26	9	17	30	35	217	69	45	20	54	79	16	91	23	45	119	23	81	88	25	16	45	65	35	41	30
Gastric disturb-	26	32	21	21	48	40	343	67	65	15	73	98	37	135	35	59	166	26	81	117	24	16	80	81	63	39	44
“Acid stomach”	83	119	59	50	122	152	1,043	210	171	69	226	353	129	445	131	233	503	101	271	339	105	68	189	275	190	113	161
Constipation	74	113	45	34	104	124	864	165	148	58	166	270	61	332	78	191	402	91	225	295	88	53	164	229	125	100	133
Habitual use of	24	42	17	21	51	38	501	71	60	22	53	102	35	127	45	88	250	33	10	108	34	15	50	84	65	30	54
Laxatives																											
Hemorrhoids																											
Tenderness in re-																											
gion of appen-																											
dix	6	13	7	6	10	18	115	20	25	4	14	34	11	17	10	15	53	10	22	28	12	4	20	17	15	8	13
Circulatory:	8	10	1	7	0	14	71	15	15	3	13	18	7	25	5	17	51	10	22	20	9	4	10	19	17	6	7
Enlarged heart																											
Organic valvular	4	12	4	4	10	17	104	19	12	8	21	29	8	28	10	11	45	12	23	29	13	9	16	15	24	14	12
heart disease																											
Functional heart mur-	7	10	7	6	14	25	155	24	25	7	33	49	19	53	17	34	75	14	44	53	12	10	48	16	29	11	22
mur																											
Arterial thickening																											
Moderate or	3	4	6	6	12	9	88	10	12	3	12	26	4	33	11	10	48	15	26	15	12	8	12	12	14	4	2
marked	12	30	9	12	34	29	252	59	29	20	59	88	35	132	27	70	177	34	89	81	34	17	58	46	57	25	23
Slight																											
Blood pressure—																											
20 and more mil-	9	17	9	14	8	17	173	40	39	14	41	47	15	67	16	47	87	16	39	47	30	17	28	39	35	11	18
lineters above																											
average																											
15 or more milli-																											
lineters below																											
average	29	44	22	21	48	54	385	72	72	28	66	124	39	173	51	92	252	44	108	130	43	23	66	105	74	42	59
Rapid pulse, over 90	5	17	4	6	14	25	156	24	37	15	33	56	28	92	25	35	66	12	40	42	34	16	38	36	45	8	23
Genito-urinary:																											
Albuminuria—																											
Moderate or	6	6	2	1	6	9	89	12	11	5	11	14	3	16	6	10	24	10	20	19	8	6	8	10	13	2	8
marked	51	50	31	23	50	51	453	95	98	31	87	139	33	145	39	87	258	47	110	135	50	29	91	123	61	42	55
Slight																											
Granular casts in	17	19	17	9	15	25	174	40	32	9	26	50	5	48	14	40	76	17	30	59	18	11	29	36	24	16	26
urine	32	30	17	17	27	32	266	52	60	18	47	86	18	101	22	55	136	35	56	94	28	23	52	64	51	26	37
Eryaline casts in urine	16	10	12	7	21	29	137	41	32	10	34	49	8	61	16	40	109	19	29	53	12	11	24	28	31	18	20
Sugar in urine	25	35	16	14	32	40	273	68	62	18	54	85	27	78	34	61	127	35	80	98	37	24	69	77	48	41	46
Pus in urine	11	11	5	12	14	15	100	33	18	7	25	37	20	53	6	29	77	22	45	31	20	8	22	32	14	25	17
Enlarged prostate																											
Frequent or painful																											
urination	31	26	22	10	39	35	233	62	44	21	55	86	23	65	21	65	141	28	61	74	23	11	64	64	38	36	43
Miscellaneous:																											
Defective vision—																											
Uncorrected	53	66	29	35	86	83	707	170	118	34	153	239	97	363	117	163	392	56	213	202	83	45	112	170	168	68	74
Corrected	30	59	31	30	66	84	528	120	111	40	100	278	45	219	56	106	302	53	125	188	50	42	85	169	117	61	106
Defective hearing	28	51	28	51	50	34	367	72	47	23	67	105	33	109	43	64	283	39	111	108	19	17	56	63	50	31	46
Wax in ears	21	42	16	14	39	38	327	69	34	18	73	116	33	109	28	62	177	34	83	101	29	14	69	46	28	28	38



APPENDIX TABLE 1.—Number of impairments by cause in each specific occupation—Continued

Nature of impairment, disease, or symptom	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Machinists (office, store)	Firemen (stationary)	Shoe factory operatives	Textile mill operators	Factory workers (un- classified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipe and steam fitters	Electricians	Waiters and hotel serv- ants	Domestic help	Chauffeurs	Barbers	Butchers	Street railway em- ployees	Telephone and tele- graph operators	Firemen, Police
Miscellaneous—Con.																												
Enlarged thyroid, simple goiter.....	7	17	3	6	11	11	77	15	9	4	18	32	11	25	4	20	32	4	20	23	10	3	7	14	15	11	6	4
Adenitis.....	10	9	7	3	9	10	126	14	9	7	22	51	13	40	14	37	77	6	28	36	10	6	24	18	21	12	8	14
Chronic skin affec- tions.....	14	29	14	15	35	39	280	51	46	13	63	115	28	91	24	54	133	21	85	102	33	21	55	62	67	37	38	42
Hernia.....	4	10	8	14	13	22	138	31	21	10	25	55	10	51	21	38	100	14	50	49	20	12	12	56	62	43	15	12
Weak inguinal rings.....	11	18	8	3	17	15	137	28	23	7	28	50	25	75	27	34	78	8	40	45	12	7	32	37	39	36	11	9
Varicose veins.....	12	15	8	10	11	18	110	30	22	2	20	32	8	43	7	35	81	15	23	26	18	19	22	37	30	18	10	26
Varicocele.....	23	24	12	12	30	26	262	56	32	14	56	95	16	78	37	55	145	23	66	95	20	17	53	62	37	30	19	31
Flat feet.....	26	40	19	25	41	49	382	98	19	76	177	77	77	254	81	100	233	43	126	132	78	46	100	152	116	48	42	71
Spinal curvature.....	9	9	2	6	13	18	137	21	22	7	22	39	10	44	7	20	67	12	36	29	10	4	21	24	18	11	11	13
Backache.....	23	23	9	17	23	22	159	36	20	6	37	29	18	65	8	43	122	21	44	46	11	12	28	27	32	11	21	17
Nervousness.....	13	20	11	7	26	28	200	37	36	10	50	78	27	73	26	42	90	20	60	62	16	13	36	61	44	18	35	23
Abnormal reflexes.....	17	28	10	11	13	24	164	33	30	13	36	45	21	60	13	42	105	18	41	47	17	11	32	49	25	25	37	24
Dizziness.....	30	31	18	15	22	38	233	58	52	15	57	73	14	71	16	55	118	22	68	89	18	16	47	44	35	21	26	32
Insomnia.....	2	3	2	3	3	3	33	8	10	2	9	15	5	20	5	10	19	2	11	10	6	0	0	7	7	8	5	7
Headache.....	57	74	34	28	80	69	594	147	109	45	140	206	48	200	60	144	319	54	154	226	52	26	142	147	107	66	79	86
Use of patent medi- cine.....	30	32	14	11	43	34	356	61	47	22	46	115	18	103	27	56	142	26	80	113	34	21	54	80	55	20	31	47

APPENDIX TABLE 2.—Number of impairments by cause in each specific occupation

## HEAD OFFICE DATA

Nature of impairment, disease, or symptom	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Mechanics (office, store)	Firemen (stationary)	Shoe-factory operatives	Textile-mill operators	Factory workers (unclassified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipe and steam fitters	Electricians	Waiters and hotel servants	Domestic help	Chauffeurs	Barbers	Butchers	Street railway employees	Telephone and telegraph operators	Firemen, police
Respiratory:																												
Tuberculosis, actual or suspected	0	2	0	0	1	2	3	1	0	0	0	7	6	7	1	5	4	0	2	3	0	4	2	1	2	0	1	1
Lung pathology not suggestive of tuberculosis	0	2	1	1	3	1	23	4	4	1	4	9	10	26	9	14	9	1	6	12	9	3	15	3	3	0	3	1
Bronchitis, emphysema	0	1	0	0	0	0	3	4	1	0	3	6	8	19	2	3	4	0	5	2	2	0	6	2	2	0	0	7
Enlarged, diseased, or buried tonsils	3	28	4	12	21	27	171	43	44	11	75	139	166	343	125	98	93	26	91	113	68	29	142	57	88	16	24	59
Dilated septum—marked	1	7	0	2	5	7	31	6	6	2	21	27	34	63	27	12	26	7	26	27	14	7	27	9	17	8	4	16
Slight	1	23	5	11	23	26	154	42	36	8	57	131	131	291	101	91	92	21	85	115	62	28	144	60	75	10	25	66
Naso-pharyngitis	0	4	1	0	3	3	20	4	2	0	11	21	27	45	21	9	10	3	12	8	9	2	21	8	6	2	5	8
Hypertrophic rhinitis (enlarged turbinates)	2	30	5	11	20	28	140	36	40	6	64	112	136	295	114	74	89	15	86	122	62	28	133	53	80	13	21	74
Frequent colds	2	8	2	6	8	6	58	14	10	3	26	49	31	72	26	25	19	13	28	44	19	9	50	11	26	3	12	18
Digestive:																												
Teeth—																												
Carious teeth, septic roots	1	11	0	6	8	6	49	15	9	3	23	35	39	104	22	32	36	7	35	35	26	9	37	11	28	5	6	15
Heavy dentistry (X ray advised)	0	16	4	7	27	19	116	31	21	10	53	97	104	190	74	51	50	18	69	81	48	21	109	37	53	8	23	57
Missing teeth	1	3	2	2	1	6	23	4	5	1	17	15	14	30	15	11	19	4	7	8	12	1	19	5	5	2	1	13
Pyorrhea (definite)	1	6	1	1	3	5	18	5	5	1	18	22	24	45	14	18	14	3	8	8	8	2	13	8	11	2	1	9
Slightly infected gums	0	10	0	6	12	14	79	22	19	6	33	73	84	177	53	51	42	15	40	43	35	21	55	25	44	6	15	33

APPENDIX TABLE 2.—Number of impairments by cause in each specific occupation—Continued

Nature of impairment, disease, or symptom	Miners	Ironworkers	Foundry workers	Blacksmiths	Metal workers	Woodworkers	Machinists (office, store)	Firemen (stationary)	Shoe-factory operatives	Textile-mill operators	Factory workers (unclassified, light)	Printers	Garment operatives	Tailors	Cutters (cloth)	Painters	Carpenters	Bricklayers	Plumbers, pipe and steam fitters	Electricians	Waiters and hotel servants	Domestic help	Chauffeurs	Barbers	Butchers	Street railway employees	Telephone and telegraph operators	Firemen, police
<b>Digestive—Continued.</b>																												
Other—																												
Gastric disturb-																												
ances	0	5	0	2	4	2	21	6	4	5	14	24	23	46	13	11	15	2	19	17	8	3	31	8	11	2	6	13
"Acid stomach"	1	7	0	3	3	2	26	7	5	5	10	21	33	46	20	17	17	3	16	19	22	4	27	13	12	4	6	19
Constipation	1	17	1	8	17	19	87	26	24	10	46	74	109	201	60	66	55	15	62	62	46	13	95	37	40	10	13	38
Habitual use of laxatives	0	10	1	5	12	15	56	22	12	9	23	60	58	132	44	45	41	12	44	44	37	13	64	30	33	8	7	55
Hemorrhoids	1	4	1	2	0	6	20	9	6	0	9	31	32	60	24	17	10	5	22	17	12	9	29	13	20	2	2	16
Tenderness in region of appendix	1	0	0	0	0	2	8	1	2	0	4	4	6	12	4	3	7	0	4	4	3	1	6	2	6	3	0	4
<b>Circulatory</b>																												
Enlarged heart	0	0	0	2	2	2	9	1	0	0	7	6	3	13	6	2	4	1	3	1	1	1	3	2	6	0	0	4
Organic, valvular heart disease	0	2	0	1	3	1	15	0	2	1	6	6	8	11	2	8	2	0	2	7	2	2	8	4	4	0	3	4
Functional heart murmur	0	7	0	2	5	2	17	2	4	0	5	17	17	33	12	8	12	1	11	18	12	4	13	7	10	2	6	6
Atrial thickening—																												
Moderate or	0	3	1	2	4	1	16	5	3	1	4	4	5	15	6	10	10	0	12	6	5	2	7	3	7	0	0	3
Slight	0	13	1	4	8	7	48	18	11	4	20	44	47	116	28	43	42	13	27	37	27	15	44	31	20	6	6	25
Blood pressure 20 or more millimeters above average	0	2	0	4	3	1	17	3	1	2	6	12	13	50	10	12	5	4	5	7	5	2	10	8	11	1	3	7
15 or more millimeters below average	2	11	0	2	5	6	47	14	10	4	20	39	41	77	26	20	20	4	17	36	25	11	36	24	26	3	7	14
Rapid pulse, over 90	0	5	0	0	3	8	32	6	14	3	17	38	37	66	20	15	10	3	18	27	11	7	8	14	22	3	8	16

Genito-urinary:	0	2	0	0	0	4	7	0	0	1	4	9	7	16	9	8	6	3	5	10	2	6	9	5	6	0	0	8
Albuminuria—	1	7	0	5	8	4	56	13	15	5	9	44	39	101	30	25	28	14	22	49	26	7	59	22	32	7	9	16
Slight.....	1	6	0	2	3	4	28	5	7	1	6	29	22	50	21	18	15	8	8	22	8	2	25	9	17	4	3	10
Granular casts in ur-	1	4	1	2	4	5	35	9	8	1	12	41	28	67	20	28	16	8	16	28	12	8	32	17	19	6	8	14
ine.....	0	4	0	0	5	3	15	4	4	0	3	16	13	48	12	9	5	3	5	8	5	3	14	5	9	3	1	10
Sugar in urine.....	1	9	0	4	9	4	27	8	9	3	7	32	30	71	23	17	22	7	17	33	20	7	53	16	20	1	4	12
Pus in urine.....	0	4	1	4	1	1	23	6	3	0	6	14	11	44	11	17	10	4	11	14	12	4	19	7	14	0	3	9
Enlarged prostate.....	0	3	0	2	3	4	23	9	4	2	8	15	8	45	12	11	6	5	16	17	5	2	31	9	8	1	3	18
Frequent or painful																												
urination.....																												
Miscellaneous:																												
Defective vision—																												
Uncorrected.....	0	18	0	9	20	12	96	18	23	8	33	81	109	213	67	69	61	15	52	69	38	15	50	39	60	6	14	22
Corrected.....	0	3	1	5	7	7	44	15	11	4	15	56	39	90	32	25	30	7	26	31	16	9	27	17	26	4	8	18
Defective hearing.....	0	15	2	8	6	5	52	13	11	4	13	35	39	86	31	27	39	7	29	21	14	5	35	13	13	3	8	16
Wax in ears.....	1	8	1	2	6	6	53	13	8	3	18	44	28	75	25	15	25	11	35	41	21	7	52	18	16	4	8	20
Enlarged thyroid,																												
simple goiter.....	0	0	0	1	2	0	0	1	0	0	1	2	1	4	1	0	1	1	0	1	0	1	1	0	0	0	0	0
Adenitis.....	0	2	1	1	1	3	11	1	2	3	4	11	3	9	2	6	5	2	7	5	4	0	10	1	4	0	2	2
Chronic skin affec-																												
tions.....	1	3	0	1	1	4	30	8	5	2	10	27	25	38	21	16	14	6	12	23	17	5	21	8	9	3	1	5
Hernia.....	0	6	0	0	1	3	14	8	2	5	5	11	8	27	19	5	10	3	8	8	12	2	5	12	14	0	1	4
Weak inguinal rings.....	0	8	2	3	0	8	25	9	7	0	9	28	23	51	23	17	18	8	13	22	11	4	23	11	15	1	3	15
Varicose veins.....	0	3	0	0	5	3	17	5	2	2	8	15	15	27	20	14	13	1	10	6	12	5	13	8	21	0	2	9
Varicocele.....	0	6	1	4	6	4	29	10	3	1	13	25	17	27	19	14	9	3	19	26	13	2	28	9	9	1	4	9
Flat feet.....	1	1	19	2	9	12	16	94	23	21	9	52	110	140	85	69	53	16	57	70	63	25	91	43	69	10	15	50
Spinal curvature.....	0	4	0	0	1	3	16	7	2	3	0	4	10	12	20	9	4	1	2	6	1	3	18	3	3	0	1	4
Backache.....	0	0	1	3	3	3	19	3	2	0	4	11	10	32	14	15	10	2	9	30	7	2	10	12	8	1	4	9
Nervousness.....	0	2	1	1	8	3	22	6	5	5	8	15	24	36	13	15	10	4	12	10	12	13	8	11	1	3	2	12
Abnormal reflexes.....	1	4	0	3	4	6	19	4	5	0	8	19	17	31	12	11	13	5	17	14	9	5	8	13	12	1	4	9
Dizziness.....	2	5	0	1	0	0	20	6	1	2	3	4	6	30	4	4	4	2	1	1	3	2	2	1	2	0	3	1
Insomnia.....	0	1	0	1	0	0	2	1	1	0	3	4	6	30	4	4	4	7	1	1	3	2	2	1	2	0	3	1
Headache.....	1	11	1	3	14	6	47	16	12	5	44	54	53	115	30	37	27	7	23	42	25	7	55	20	32	5	7	22
Use of patent medi-																												
cine.....	0	8	1	0	3	3	26	6	2	3	13	23	22	38	16	17	14	5	16	16	13	7	23	4	12	1	5	9

## SEX DIFFERENCES IN THE PREVALENCE OF DENTAL CARIES<sup>1</sup>

Based on 12,435 Oral Examinations by Dental Personnel in Georgia, Illinois, Missouri, and Hagerstown, Md.

(STUDIES IN DENTAL CARIES No. 2)

By AMANDA L. STOUGHTON, *Acting Assistant Surgeon*, and VERA THORNHILL MEAKER, *Dental Hygienist, United States Public Health Service*

In a previous study,<sup>2</sup> the prevalence of dental caries in a group of school children of different ages was discussed. Most of the oral examinations were made by one experienced dental hygienist; but since she and the dental hygienist who made the remainder of the examinations had previously worked out a standard technique, their findings have been considered comparable and have been combined.

The first paper, in which is given a more detailed discussion of the field work, considered the prevalence of several dental conditions among children of both sexes. In the present study, the data for boys and girls are treated separately.

The examination records were so arranged that both temporary and permanent teeth could be charted. All carious teeth were designated, a special subdivision being made, called "remaining roots," which included teeth having crowns which were entirely carious, those having the pulp involved, and those with fistulæ. Instead of the number of individual fillings, the number of filled teeth was charted. The term "total past decay" when applied to permanent teeth includes missing as well as decayed and filled teeth. All the teeth, whether temporary or permanent, which were present in the child's mouth at the time of examination are included in the term "all teeth."

### TEMPORARY TEETH

Although the percentages of children of both sexes having one or more decayed or filled temporary teeth decline rapidly after the first few age groups, the percentages remain higher among the boys after the 7-year group. (Table 1, fig. 1.) Excepting among 6-year-old children, more boys than girls had five or more temporary teeth decayed or filled. Undoubtedly, the fact that the percentage of children with decayed temporary teeth decreases with age is due to their gradual replacement by permanent teeth. It may be that boys lose their temporary teeth somewhat later than girls.

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<sup>1</sup> From Field Investigations in Child Hygiene, in Cooperation with the Office of Statistical Investigations, United States Public Health Service. Dental Examinations by Meaker and Statistical Analysis by Stoughton.

<sup>2</sup> Dental decay and corrections among school children of different ages. Public Health Reports, Vol. 46, No. 44, October 30, 1931. Reprint No. 1524.

TABLE 1.—Condition of temporary teeth of boys and girls of each age from 6 to 14 years

Age	Boys								Girls							
	Total children	Decayed or filled		Decayed		Remain- ing roots		Fis- tulae, 1 or more	Total children	Decayed or filled		Decayed		Remain- ing roots		Fis- tulae, 1 or more
		1 or more	5 or more	1 or more	5 or more	1 or more	5 or more			1 or more	5 or more	1 or more	5 or more			
NUMBER																
6.....	451	394	268	388	263	148	20	47	462	404	277	399	272	160	9	47
7.....	541	490	320	485	309	200	16	32	581	529	323	521	316	211	14	42
8.....	556	512	307	500	294	224	17	42	560	504	297	496	283	205	10	40
9.....	673	607	289	585	270	249	20	24	662	553	195	536	177	171	10	23
10.....	804	632	175	622	168	236	5	19	848	655	119	640	113	176	6	18
11.....	849	475	84	469	83	181	7	13	853	346	43	337	42	128	1	7
12.....	659	235	24	235	22	88	3	2	702	165	10	162	10	69	2	3
13.....	585	108	6	103	6	45	0	0	588	66	2	64	2	27	0	1
14.....	400	31	0	30	0	20	0	0	367	14	0	14	0	4	0	0
PER CENT																
6.....	100.0	87.4	59.4	86.0	58.3	32.8	4.4	10.4	100.0	87.4	59.9	86.4	58.9	34.6	1.9	10.2
7.....	100.0	90.6	59.1	89.6	57.1	37.0	3.0	5.9	100.0	91.0	55.6	89.7	54.4	36.3	2.4	7.2
8.....	100.0	92.1	55.2	89.9	52.9	40.3	3.1	7.5	100.0	90.0	53.0	88.6	50.5	36.6	1.8	7.1
9.....	100.0	90.2	42.9	88.4	40.1	37.0	3.0	3.6	100.0	83.5	29.5	81.0	28.7	25.8	1.5	3.5
10.....	100.0	78.6	21.8	77.4	20.9	29.3	.6	2.4	100.0	65.4	14.0	63.7	13.3	20.7	.7	2.1
11.....	100.0	55.9	9.9	55.2	9.8	21.3	.8	1.5	100.0	40.6	5.0	39.5	4.9	14.8	.1	.8
12.....	100.0	35.7	3.6	35.7	3.3	13.3	.5	.3	100.0	23.5	1.4	23.1	1.4	9.8	.3	.4
13.....	100.0	17.8	1.0	17.3	1.0	7.6	.0	.0	100.0	11.2	.3	10.9	.3	4.6	.0	.2
14.....	100.0	7.7	0	7.5	0	5.0	0	0	100.0	3.8	0	3.8	0	1.1	0	0

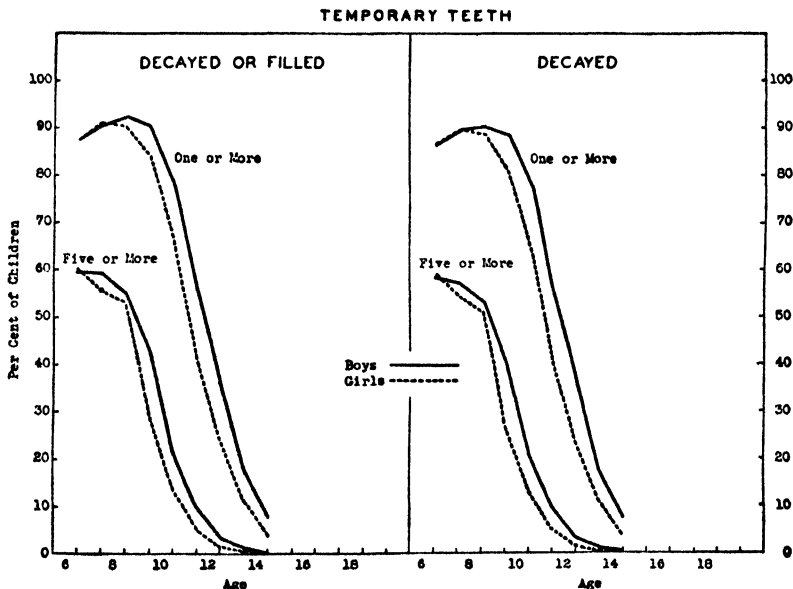


FIGURE 1.—Prevalence of total past decay and untreated caries in temporary teeth of boys and girls at successive years of age

Since the number of temporary teeth filled is so small, the graphs of the percentages of children having unfilled carious temporary teeth are practically the same as those of children having temporary teeth decayed or filled. The percentages of boys having temporary teeth badly decayed (remaining roots) are also higher than the corresponding percentages of girls in every age except the 6-year group. (Fig. 2.) A higher percentage of boys than of girls have five or more temporary teeth so badly decayed as to be classed as "remaining roots." The proportion of children having one or more temporary teeth with fistulae is practically the same for both sexes in each age group.

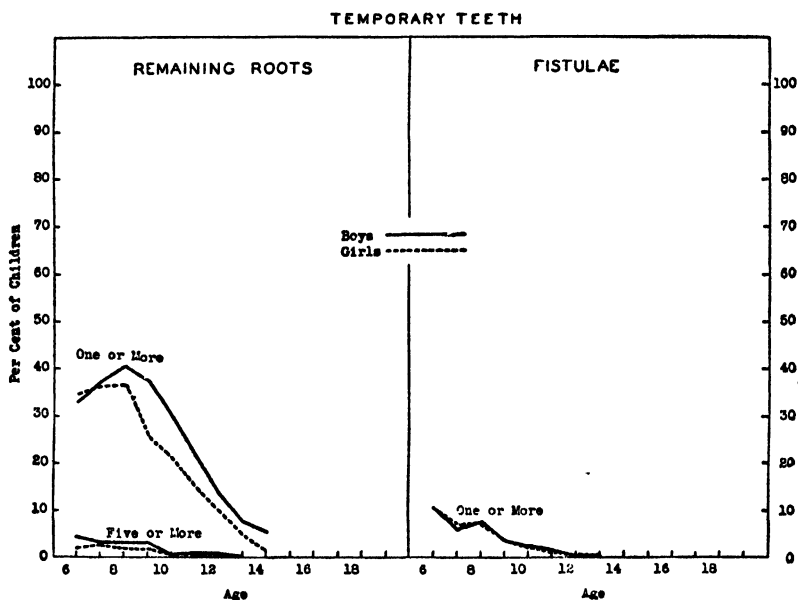


FIGURE 2.—Prevalence of marked caries and fistulae in temporary teeth of boys and girls at successive years of age

TABLE 2.—Condition of temporary teeth of boys and girls in three-year age groups from 6 to 14 years

Age and sex	Total number of children	Per cent having decayed or filled					Per cent having remaining roots				
		1 or more	3 or more	5 or more	7 or more	9 or more	1 or more	3 or more	5 or more	7 or more	9 or more
BOYS											
6 to 8.....	1,548	90.2	77.0	57.8	37.8	19.1	37.0	10.4	3.4	1.2	0.4
9 to 11.....	2,326	73.7	45.9	23.6	9.0	2.9	28.6	6.5	1.4	.3	.1
12 to 14.....	1,654	22.5	5.7	1.8	.3	.1	9.2	1.3	.2	.1	-----
GIRLS											
6 to 8.....	1,603	89.6	74.9	56.0	35.2	16.2	35.9	8.6	2.1	.4	.1
9 to 11.....	2,363	61.5	32.7	15.1	5.9	1.7	20.0	3.9	.7	.1	-----
12 to 14.....	1,657	14.8	3.4	.7	.1	.1	6.0	.5	.1	.1	-----

From the accompanying graphs, it is evident that the relative incidence of various dental defects among boys and among girls is not the same in each age group. Instead of showing rates for each age separately, the children were divided into 3-year age groups and the percentage of children in these groups who had one or more, three or more, etc., teeth showing the defect in question are given in Table 2 and are plotted in Figure 3.

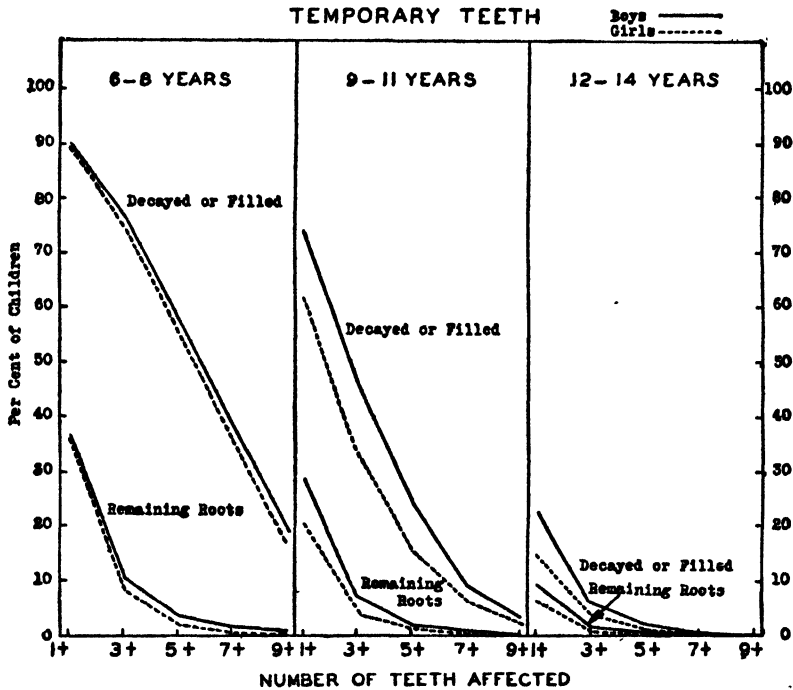


FIGURE 3.—Extent of total past decay and marked caries in temporary teeth of boys and girls in 3-year age groups

In all three groups a greater proportion of boys than of girls had temporary teeth decayed or filled, but the difference was much more marked in the last two groups than among the youngest children.

In the 6 to 8 year group, the percentage of boys having badly decayed temporary teeth (remaining roots) is somewhat higher than the corresponding percentage of girls. In the 9 to 11 and 12 to 14 year old groups a much larger proportion of boys than girls have teeth nearly destroyed by caries (remaining roots).



TABLE 3.—Condition of permanent teeth of boys and girls of each age from 6 to 19 years

## NUMBER

Age	Boys									Girls								
	Total children	Decayed, missing, or filled		Decayed		Missing, 1 or more	Filled		Remaining roots, 1 or more	Total children	Decayed, missing, or filled		Decayed		Missing, 1 or more	Filled		Remaining roots, 1 or more
		1 or more	5 or more	1 or more	5 or more		1 or more	5 or more			1 or more	5 or more	1 or more	5 or more		1 or more	5 or more	
6.....	451	82	2	79	0	0	6	2	0	462	105	1	103	1	0	3	0	1
7.....	541	247	3	241	1	5	15	1	3	581	281	3	266	3	4	21	0	6
8.....	556	341	7	321	5	3	35	1	8	560	363	9	348	5	10	34	3	6
9.....	673	444	22	404	9	21	77	5	12	662	471	22	436	14	30	87	1	17
10.....	804	570	66	503	47	42	117	8	30	848	643	61	543	30	60	180	6	31
11.....	849	630	92	556	59	63	150	11	44	853	662	104	555	59	85	204	19	46
12.....	659	517	116	453	70	89	127	12	60	702	596	170	525	97	103	164	30	40
13.....	595	498	175	451	115	108	115	20	65	588	506	201	445	119	127	155	28	58
14.....	400	347	166	314	107	90	99	21	49	367	325	162	293	91	84	130	27	38
15.....	273	247	146	219	67	65	122	43	37	283	261	171	223	84	79	129	43	28
16.....	130	116	76	102	42	33	63	26	14	195	183	130	160	60	58	117	51	16
17.....	71	67	50	57	23	21	43	28	7	124	121	96	105	33	51	95	45	10
18.....	36	36	31	30	15	15	29	16	3	83	69	70	26	35	63	32	4	4
19.....	19	19	16	16	10	7	14	9	3	65	64	54	55	17	26	51	33	3

## PER CENT

6.....	100.0	18.2	0.4	17.5	0.0	0.0	1.3	0.4	100.0	22.7	0.2	22.3	0.2	0.0	0.6	0.2
7.....	100.0	45.7	0.5	44.5	0.2	0.9	2.8	0.2	100.0	48.4	0.5	45.8	0.5	0.7	3.6	1.1
8.....	100.0	61.3	1.3	57.7	0.9	0.5	6.3	0.2	100.0	64.8	1.6	62.1	0.9	1.8	9.1	0.5
9.....	100.0	66.0	3.3	60.6	1.3	3.1	11.4	0.7	100.0	71.1	3.3	65.9	2.1	4.5	13.1	1.1
10.....	100.0	70.9	8.2	62.6	5.8	5.2	14.5	1.0	100.0	75.8	3.7	64.0	3.5	7.1	21.2	7.7
11.....	100.0	74.2	10.8	65.5	6.9	7.4	17.7	1.3	100.0	77.6	12.2	65.1	6.9	10.0	23.9	2.2
12.....	100.0	78.5	17.6	68.7	10.6	13.5	19.3	1.8	100.0	84.9	24.2	74.8	13.8	14.7	23.4	4.8
13.....	100.0	83.7	29.4	75.8	19.3	18.1	19.3	3.4	100.0	86.9	34.2	75.7	20.2	16.0	20.4	7.0
14.....	100.0	86.7	41.5	80.2	26.7	22.5	24.7	5.3	100.0	88.5	44.1	79.8	20.7	18.0	25.4	10.3
15.....	100.0	90.5	53.5	80.2	24.5	23.8	48.1	5.7	100.0	92.2	60.4	78.8	20.7	26.9	35.4	15.2
16.....	100.0	89.2	58.5	78.5	32.3	25.6	48.5	15.4	100.0	93.8	66.7	82.1	30.8	28.9	60.0	26.1
17.....	100.0	94.4	70.4	80.3	32.4	29.6	60.6	33.4	100.0	94.5	75.8	82.0	25.8	39.8	74.2	38.2
18.....	100.0	100.0	86.1	83.3	41.7	41.7	80.5	44.4	100.0	98.8	82.1	83.3	30.9	41.7	75.0	38.1
19.....	100.0	100.0	84.2	84.2	52.6	36.8	73.7	47.4	100.0	98.5	83.1	84.6	26.1	40.0	78.5	50.8

## PERMANENT TEETH

In contrast to the graphs for temporary teeth, in which more boys than girls had caries, a higher percentage of girls than boys have one or more permanent teeth decayed, missing, or filled in each age group excepting the last three. (Table 3, fig. 4.) As suggested in the preceding section, it may be that girls lose their temporary teeth somewhat earlier than boys, and consequently their permanent teeth erupt sooner and are exposed to caries over a longer period. The difference is more marked after eight years. About the same percentage of boys and girls between 6 and 10 years of age had five or more permanent teeth decayed, missing, or filled. Among the older children, excepting those of the last two age groups, the percentage of girls was higher than the percentage of boys at each age. The percentage of girls having one or more permanent teeth decayed and unfilled tends to be higher than the percentage of boys. Practically the same percentages of boys and girls had five or more unfilled carious perma-

nent teeth at each age except after 16, when the percentage of boys is higher.

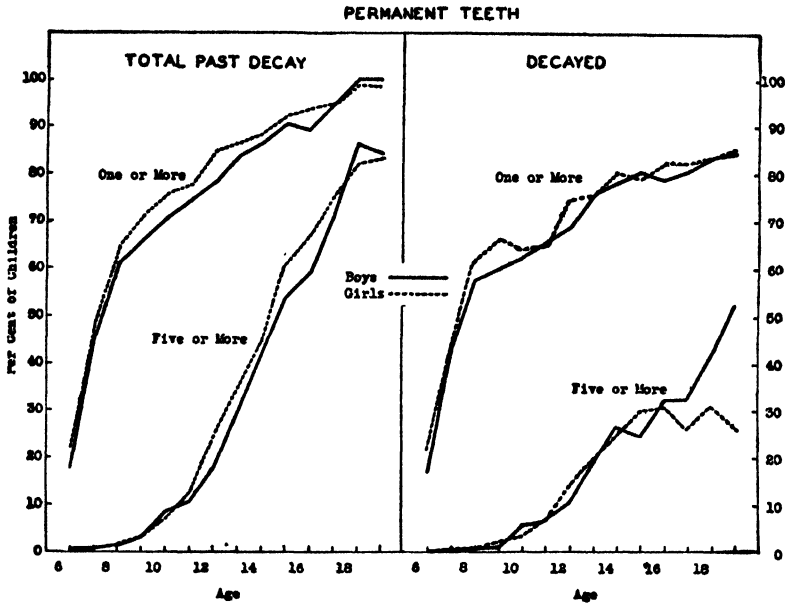


FIGURE 4.—Prevalence of total past decay and untreated caries in permanent teeth of boys and girls at successive years of age

TABLE 4.—Condition of permanent teeth of boys and girls in 3-year-age groups from 6 to 17 years

Age and sex	Total number of children	Per cent having decayed, missing, or filled					Per cent having filled					Per cent having missing		
		1 or more	3 or more	5 or more	7 or more	9 or more	1 or more	3 or more	5 or more	7 or more	9 or more	1 or more	3 or more	5 or more
BOYS														
6 to 8.....	1,548	43.3	17.4	0.8	0.1	0.1	3.6	0.7	0.3	0.1	-----	0.5	0.1	-----
9 to 11.....	2,326	70.7	43.0	7.7	1.9	.6	14.8	5.8	1.0	3	0.1	5.4	3	-----
12 to 14.....	1,654	82.3	58.7	27.6	12.4	5.3	20.6	9.2	3.2	1.0	.7	17.4	1.6	0.2
15 to 17.....	474	90.7	76.8	67.4	38.4	23.2	48.1	30.6	10.2	11.6	5.7	25.1	3.6	.6
GIRLS														
6 to 8.....	1,603	46.7	21.4	.8	.2	.1	3.6	1.3	.2	.1	-----	.9	-----	-----
9 to 11.....	2,363	75.2	46.8	7.9	2.5	.8	19.9	7.6	1.1	3	.1	7.4	.4	-----
12 to 14.....	1,657	86.1	62.0	32.2	15.8	6.6	27.1	13.7	5.1	2.2	.8	18.9	2.3	.2
15 to 17.....	606	93.2	83.0	65.5	45.4	26.1	56.3	38.1	22.9	11.9	5.9	31.0	6.6	.8

About the same proportion of boys and girls have one or more permanent teeth nearly destroyed by caries (remaining roots) up to the 12-year group. (Fig. 5.) Among all the older children the percentage of boys is considerably higher than the percentage of girls. At nearly every age a larger percentage of girls than boys have one or more permanent teeth filled. The proportions are practically the same for the two sexes among children from 6 to 8 years of age. The

percentages of girls having five or more permanent teeth filled are somewhat higher than the corresponding percentages of boys among children between 11 and 17 years of age. More girls than boys have

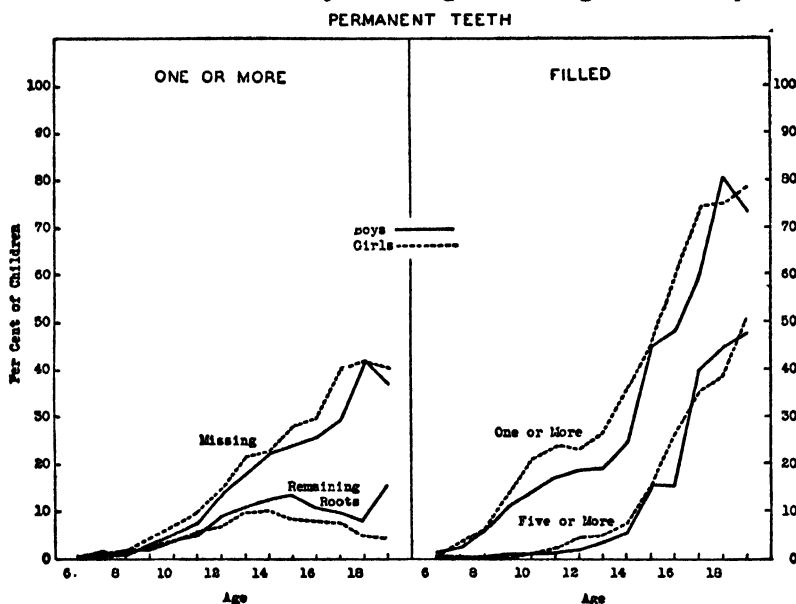


FIGURE 5.—Prevalence of markedly decayed, missing, and filled permanent teeth among boys and girls at successive years of age

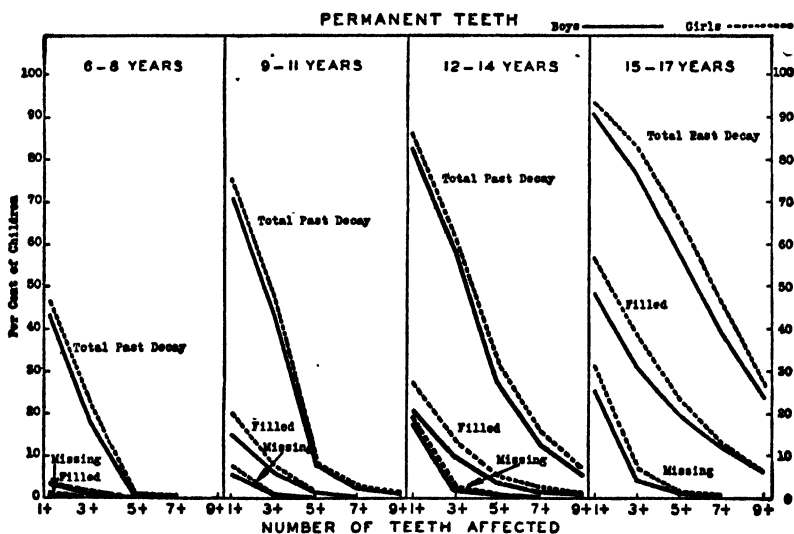


FIGURE 6.—Extent of total past decay, fillings, and extractions of permanent teeth of boys and girls in 3-year age groups

lost at least one permanent tooth except among the 6 and 7 year old children.

In Figure 6 and Table 4 the condition of the permanent teeth of the boys and girls in 3-year-age groups is shown.

Among the 6 to 8 year old children a slightly higher percentage of girls than boys had permanent teeth decayed, missing, or filled. Few children in this or in the 9 to 11 year group had five or more permanent teeth affected, but the percentages are practically the same among boys and girls in the two oldest groups, a larger proportion of girls than of boys was affected. Among the 6 to 8 year old children few had fillings in permanent teeth, and the percentages of boys and girls are practically the same. Among the older children the percentage of girls is, on the whole, appreciably higher than that of the boys.

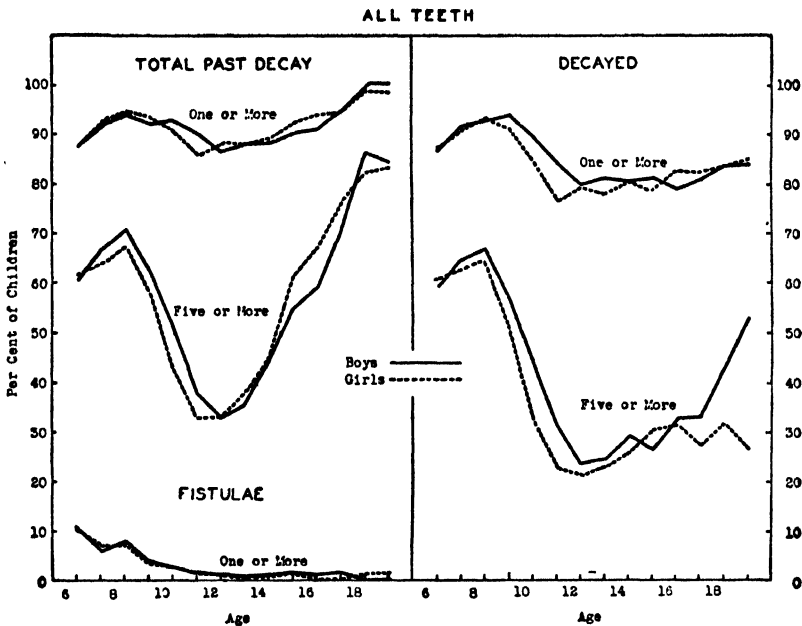


FIGURE 7.—Prevalence of total past decay, untreated caries, and fistulae in teeth of boys and girls at successive years of age

More girls than boys had had permanent teeth extracted. The difference is most pronounced among the 15 to 17 year old children.

#### ALL TEETH

The graphs based on all teeth are similar to the graphs for temporary teeth in the early age groups and to those for permanent teeth among the older children. (Fig. 8, Table 5.) There is no striking difference between the percentages of boys and girls having one or more teeth decayed, missing, or filled. When children with five or more teeth decayed, missing, or filled are considered, the percentages are higher among boys in the early-age groups and among girls in the later age groups.

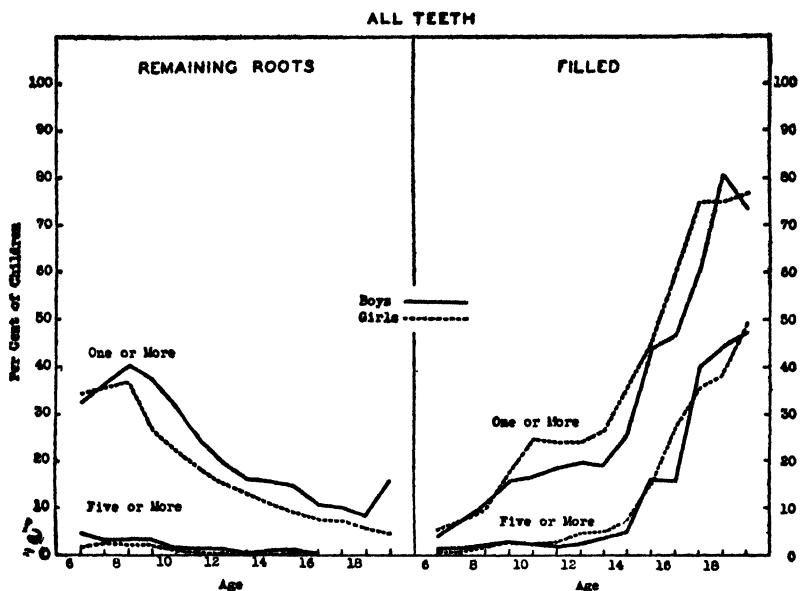


FIGURE 8.—Prevalence of marked caries and fillings in teeth of boys and girls at successive years of age

TABLE 5.—Condition of teeth of boys and girls of each age from 6 to 19 years

Age	Total children	Boys								
		Decayed, missing, or filled		Decayed		Remaining roots		Filled		Fistulae,
		1 or more	5 or more	1 or more	5 or more	1 or more	5 or more	1 or more	5 or more	1 or more
NUMBER										
6.....	451	396	274	389	267	148	20	20	4	47
7.....	541	498	360	494	348	199	16	40	7	32
8.....	556	523	392	514	370	225	17	59	11	44
9.....	673	621	417	630	381	253	21	109	17	25
10.....	804	747	407	717	352	255	9	137	16	31
11.....	849	764	317	713	264	208	8	160	16	15
12.....	659	670	214	523	152	131	6	130	14	8
13.....	595	525	209	480	143	67	1	116	20	8
14.....	400	353	178	321	115	63	3	100	20	8
15.....	273	246	148	221	71	40	3	121	43	4
16.....	130	118	76	102	42	14	0	61	20	1
17.....	71	67	50	57	23	7	0	43	28	1
18.....	36	36	31	30	15	3	0	29	16	0
19.....	19	19	16	16	10	3	0	14	9	0
PER CENT										
6.....	100.0	87.8	60.7	86.3	59.2	32.8	4.4	4.4	0.9	10.4
7.....	100.0	92.1	66.5	91.3	64.3	36.8	2.9	7.4	1.3	5.9
8.....	100.0	94.1	70.5	92.4	66.5	40.5	3.1	10.6	2.0	7.9
9.....	100.0	92.3	62.0	93.6	56.6	37.6	3.1	16.2	2.5	3.7
10.....	100.0	92.9	50.6	89.2	43.8	31.7	1.1	17.0	2.0	2.6
11.....	100.0	90.0	37.3	84.0	31.1	24.5	.9	18.8	1.9	1.8
12.....	100.0	86.5	32.5	79.4	23.1	19.9	.9	19.7	2.1	1.3
13.....	100.0	88.2	35.1	80.7	24.0	16.3	.2	19.5	3.4	.5
14.....	100.0	88.3	44.5	80.3	28.7	15.7	.7	25.0	5.0	.7
15.....	100.0	90.1	54.2	80.9	26.0	14.7	1.1	44.3	15.7	1.5
16.....	100.0	90.8	58.5	78.5	32.3	10.8	-----	46.0	15.4	.8
17.....	100.0	94.4	70.4	80.3	32.4	9.9	-----	60.6	39.4	1.4
18.....	100.0	100.0	86.1	83.3	41.7	8.3	-----	80.5	44.4	-----
19.....	100.0	100.0	84.2	84.2	52.6	15.8	-----	73.7	47.4	-----

TABLE 5.—*Condition of teeth of boys and girls of each age from 6 to 19 years—Con.*

Age	Total children	Girls								
		Decayed, missing, or filled		Decayed		Remaining roots		Filled		Fistulae,
		1 or more	5 or more	1 or more	5 or more	1 or more	5 or more	1 or more	5 or more	
NUMBER										
6.....	462	405	283	400	279	160	9	24	2	47
7.....	581	537	370	528	363	211	14	43	4	40
8.....	560	529	377	520	361	207	11	56	9	41
9.....	662	617	382	602	333	178	12	115	17	23
10.....	848	768	350	718	277	193	6	209	19	20
11.....	853	733	276	652	190	157	3	209	22	12
12.....	702	620	228	556	147	108	2	169	30	5
13.....	588	519	218	458	132	78	0	156	28	2
14.....	367	327	163	294	92	40	0	130	27	3
15.....	283	261	172	223	84	26	1	128	43	3
16.....	195	183	130	160	60	15	0	118	52	0
17.....	128	121	97	105	34	9	0	96	45	0
18.....	84	83	69	70	26	5	0	63	32	1
19.....	65	64	54	55	17	3	0	50	32	1
PER CENT										
6.....	100 0	87. 7	61. 3	86. 6	60 4	34. 6	1. 9	5. 2	0 4	10 2
7.....	100 0	92. 4	63. 7	90. 9	62 5	36 3	2 4	7 4	. 7	6. 9
8.....	100 0	94. 5	67. 3	92 9	64. 5	37 0	2 0	10 0	1. 6	7. 3
9.....	100 0	93. 2	57. 7	90 9	50 3	26 9	1. 8	17. 4	2 6	3. 5
10.....	100 0	90 6	42. 3	84. 7	32 7	22 7	. 7	24. 6	2 2	2. 3
11.....	100 0	85 9	32. 4	76. 4	22. 3	18 4	. 3	24 5	2. 6	1. 4
12.....	100 0	88 3	32. 5	79. 2	20. 9	15. 4	. 3	24 1	4. 3	. 7
13.....	100 0	88 3	37. 1	77 9	22 4	13 3	-----	26 5	4. 8	. 3
14.....	100 0	89. 1	44 4	80. 1	25 1	10. 9	-----	35 4	7. 3	. 8
15.....	100 0	92 2	60 8	78. 8	29 7	9 2	. 3	45 2	15. 2	1. 1
16.....	100 0	93. 8	66 7	82. 1	30. 8	7 7	-----	60. 5	26. 7	-----
17.....	100 0	94 5	75 8	82. 0	26. 6	7 0	-----	75 0	35. 1	-----
18.....	100 0	98. 8	82. 1	83. 3	30 9	5 9	-----	75 0	38. 1	1. 2
19.....	100 0	98. 5	83. 1	81. 6	26. 1	4. 6	-----	76. 9	49. 2	1. 5

In most groups under 12 years of age higher percentages of boys than of girls had unfilled carious teeth. Among children 12 years of age and over, practically the same proportion of boys and girls were so affected. In nearly every age group a higher percentage of boys than girls had five or more unfilled carious teeth.

Practically the same proportions of boys and girls in each age group had teeth with fistulæ.

The proportions of boys and girls in 3-year-age groups having teeth decayed, missing, or filled are shown in Figure 9 and Table 6.

TABLE 8.—Condition of teeth of boys and of girls in 3-year-age groups from 6 to 17 years

Age and sex	Total number of children	Per cent having decayed, missing, or filled					Per cent having filled				
		1 or more	3 or more	5 or more	7 or more	9 or more	1 or more	3 or more	5 or more	7 or more	9 or more
BOYS											
6 to 8.....	1,548	91.5	80.8	66.3	48.8	30.8	7.7	3.5	1.4	0.6	0.1
9 to 11.....	2,326	91.7	73.5	49.1	28.8	14.2	17.5	7.4	2.1	.7	.8
12 to 14.....	1,654	87.5	64.6	36.3	15.7	7.1	20.9	9.3	3.3	1.1	.7
15 to 17.....	474	90.9	77.0	57.8	38.4	23.4	47.5	30.4	19.2	11.6	8.7
GIRLS											
6 to 8.....	1,603	91.8	79.3	64.3	48.8	30.1	7.7	3.3	.9	.4	.2
9 to 11.....	2,363	89.6	70.1	43.0	21.9	9.9	22.6	9.2	2.5	.6	.2
12 to 14.....	1,657	88.5	66.4	36.8	18.1	7.5	27.5	13.8	5.1	2.2	.8
15 to 17.....	606	93.2	83.0	65.8	45.9	26.2	56.4	36.3	23.1	11.9	8.9

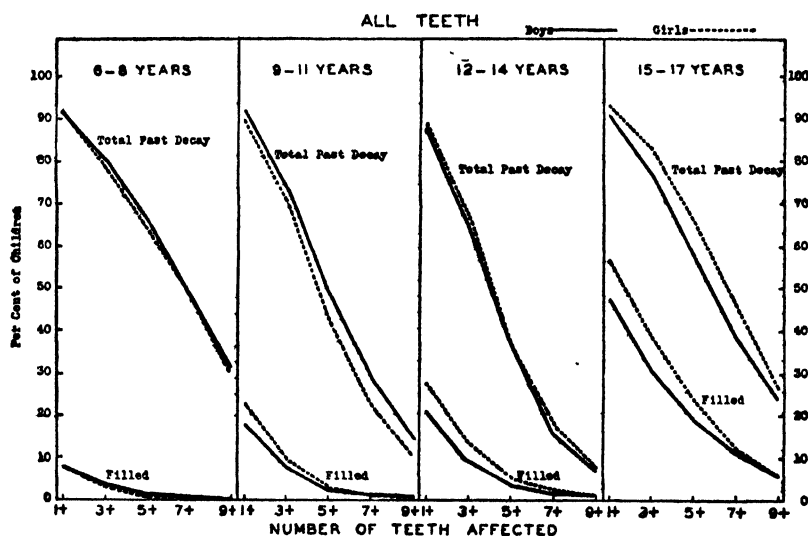


FIGURE 9.—Extent of total past decay and fillings in teeth of boys and girls in 8-year age groups

From 6 to 8 years the incidence of past and present decay is practically the same for both sexes. However, among 9 to 11 year old children a larger percentage of boys than of girls have teeth that are or have been carious. The ratio of boys to girls becomes somewhat greater when children having larger numbers of affected teeth are considered. In the group from 12 to 14 years the percentages are again very nearly alike for both sexes. From 15 to 17 years the proportion of girls affected is higher.

A marked contrast is evident in the graphs showing the percentages of boys and girls having fillings. Between 6 and 8 years of age the percentages are much the same for both sexes. Among the older children, however, a considerably greater proportion of girls than of

boys have one or more filled teeth. The ratio gradually lessens as children having larger numbers of filled teeth are considered. In the last group practically the same percentages of boys and girls had seven or more and nine or more teeth which had been filled.

## SUMMARY

### TEMPORARY TEETH

At each age except among the very youngest children more boys than girls have carious or filled temporary teeth. (Fig. 1.)

A considerably higher percentage of boys than of girls in most age groups had markedly decayed temporary teeth. (Fig. 2.)

There was no sex difference in the prevalence of temporary teeth with fistulae. (Fig. 2.)

### PERMANENT TEETH

On the whole, more girls than boys had permanent teeth decayed, missing, or filled. (Fig. 4.)

The prevalence of unfilled carious permanent teeth was practically the same among boys and girls. (Fig. 4.)

A higher proportion of girls than of boys had had permanent teeth extracted. (Fig. 5.)

Among children 12 years of age and older, more boys than girls had markedly decayed permanent teeth. (Fig. 5.)

In most age groups, a considerably higher percentage of girls than of boys had had one or more permanent teeth filled. (Fig. 5.)

About the same percentage of boys and girls had five or more filled permanent teeth. (Fig. 5.)

### ALL TEETH

A greater proportion of boys among the younger children and of girls among the older children had decayed, missing, or filled teeth. (Fig. 7.)

Among the younger children, more boys than girls had unfilled carious teeth. Among older children, there was little difference between the sexes, except that a considerably higher number of boys than girls in the last three age groups had five or more unfilled carious teeth. (Fig. 7.)

The prevalence of teeth with fistulae was practically the same among boys and girls. (Fig. 7.)

A very much higher percentage of boys than of girls had markedly decayed teeth. (Fig. 8.)

On the whole, more girls than boys had teeth with fillings. (Fig. 8.)



## A TRACHOMA SURVEY IN THE RIO GRANDE VALLEY OF TEXAS

By C. E. RICE, *Passed Assistant Surgeon, United States Public Health Service*

Because of the repeated reports of trachoma in considerable amount in the citrus region of the Rio Grande Valley in Texas, the assistance of the United States Public Health Service was requested by the Texas State Department of Health in making a survey to determine the actual prevalence of trachoma in this region. The survey was begun on March 5, 1931, by representatives of the Public Health Service and State department of health jointly.

### SCOPE OF SURVEY

During a period of six weeks there were examined 11,054 school children in attendance at 76 schools in Cameron, Willacy, Hidalgo, and Starr Counties in southeastern Texas. In addition, visits were made to 25 homes of Mexicans living in and around Brownsville. The homes selected for visits were those from which children in school showed marked granular involvement of the conjunctiva of the eyelids. This part of the survey was difficult, owing to fears aroused because of inability to understand what was desired and also because some of the homes visited were entirely deserted at the time on account of the absence of the families en masse at work in the fields.

### PLAN OF STUDY

The preliminary work of finding the suspicious cases was done by a nurse specially trained in trachoma work, assisted by public health nurses, during the period March 5 to April 14, 1931. Diagnostic clinics, during the period April 16-22, 1931, were held at certain points by medical experts for the examination of each suspected case thus uncovered.

### RESULTS

In all, 44 cases of trachoma were uncovered, and in 40 of these the disease had apparently been contracted in or in the vicinity of the Rio Grande Valley. Eight of the 40 were arrested cases without sufficient corneal involvement to cause any loss of vision and had never been treated. A Mexican janitor in one large city school had the most active case seen in adults. This particular case showed the characteristic purplish coloration in the upper cul-de-sac, with some papillary overgrowth and marked invasion of the corneas by pannus.

Suspected cases found by the nurses were examined at 11 diagnostic clinics held in Cameron and Hidalgo Counties. In those clinics 119 adults and 1,747 children between the ages of 1 and 20 were examined with the results shown in Table 1.

TABLE 1.—Results of examination of suspected cases at 11 diagnostic clinics

Condition	Adults	Children	Condition	Adults	Children
Trachoma.....	7	37	Conjunctivitis.....		141
Suspected trachoma.....	3	72	Negative.....	100	872
Folliculosis.....	6	625	Total.....	119	1,747
Cataract.....	8				

Because of the predominance of folliculosis, these cases were studied from the standpoint of age distribution and location.

#### Age distribution

	Up to 5	5 to 9	9 to 14	14 to 20	Adults
Age distribution of total number examined <sup>1</sup> .....	43	619	919	113	119
Age distribution of cases of folliculosis.....	12	439	168	6	6

<sup>1</sup> Ages not given in 53 cases.

It is very evident that folliculosis was largely confined to children in the primary grades and was almost negative in the higher grades.

The following figures show the high percentage of folliculosis found in the individual schools:

#### 1. La Feria School (largely attended by Mexican children):

Total examined.....	201
Folliculosis.....	122
Percentage of folliculosis.....	67

#### 2. Santa Maria School (largely attended by Mexican children):

Total examined.....	164
Folliculosis.....	90
Percentage of folliculosis.....	54.9

#### 3. Rio Hondo School (largely attended by American children):

Total examined.....	418
Folliculosis.....	109
Percentage of folliculosis.....	26.1

There was observed a high percentage of folliculosis among the children examined in the other schools.

#### THERAPEUTIC DIAGNOSIS

The children attending the Santa Maria school in Cameron County, presenting evidence of follicular involvement of the eyelids, were placed under treatment in which a 2 per cent solution of mercuriochrome or a one-fourth per cent solution of zinc sulphate was used. This treatment was administered by the teachers and older students. A reexamination of 48 pupils of this school treated in the above manner for folliculosis over a period of five weeks showed that 33, or 69 per cent, had become clinically negative. Considering the very irregular attendance of many Mexican children, because they are required by their parents to work in the fields, these results may be considered most excellent.

As these children had the same type of conjunctival involvement that is found to be so prevalent in the Rio Grande Valley, the prompt clearing up of the condition under mild astringents and antiseptics is evidence in favor of the nontrachomatous nature of their lid pathology.

#### METHOD OF EXAMINATION

All those presenting themselves at the diagnostic clinics had the eyelids of both eyes well everted so as to expose a generous portion of the upper and lower cul-de-sac. The observation of the conjunctiva thus exposed was made in natural light. In 90 per cent of all individuals the hand slit-lamp was used for examining the cornea for opacities and for pannus. The early commencement of pannus can not be seen without some magnification and focal light.

#### PATHOLOGY

Pannus was noted in all of the few cases of trachoma examined. In the arrested cases, scar tissue was quite evident in the cul-de-sac, more in the upper than the lower, and the pannus was ghostlike or markedly attenuated. The papillary type was more predominant.

In the many cases of folliculosis the granules were usually large and numerous, and on everting the upper lid these granules would often roll out to the extent of obscuring the cornea. On close observation, blood vessels could be made out at the base of the granules. The lids were quite pliable. In the lower lids the granules were also numerous; but on stretching the conjunctiva to separate the granules, blood vessels could usually be made out. On observing the corneas in these cases with the slit lamp there was not the least suspicion of blood vessel penetration of corneal tissue, and the corneas were always smooth and clear.

In the total examined there were only two cases of corneal opacity, both caused by trachoma and both in adults—one from Minnesota and the other from central east Texas. Only one case of lid distortion, due to trachoma, was observed—in an adult from the vicinity of the Oklahoma border.

#### CONCLUSIONS

1. Trachoma at the present time is but a limited public health problem in the citrus belt of the Rio Grande Valley, both among Americans and Mexicans. It is believed that the high living standards among the American population of this region precludes the possibility of trachoma ever becoming much of a problem in this region.

2. The instillation of zinc sulphate or mercurochrome solution in the conjunctival sac of children showing follicular involvement apparently clears up most of such conditions in this region. However, to be most effective this treatment should be supplemented by

instruction in personal hygiene, including cleanliness and the use of individual towels. It is not believed necessary to keep from school the children receiving the above treatment.

3. It is recommended that cases that show but little improvement after two months of treatment should be grattaged, including both upper and lower lids, preferably under local anesthesia. This should be followed for some time with 2 per cent silver nitrate solution applied to the everted lids and then irrigated off.

4. The general population and the physicians of this region are greatly interested in school health supervision, and their full cooperation in any campaign for the improvement of health and sanitation in schools may be taken for granted.

### COURT DECISION RELATING TO PUBLIC HEALTH

*City held not liable to cemetery owners for damages resulting from ordinance forbidding burials within city.*—(California District Court of Appeal, Second District; *Hand et al. v. City of Whittier*, 4 P. (2d) 273; decided Oct. 22, 1931.) The people of the city of Whittier, by direct vote, adopted an ordinance declaring that the burial of the dead within the city was dangerous to life and detrimental to the public health and forbidding the interment of dead bodies in any cemetery within the corporate limits. The plaintiffs, who were the owners of a small cemetery located in a thinly populated portion of the city, brought an action against the city for damages caused by "said ordinance and the unreasonable, arbitrary caprice and unrestrained will of the municipality and the refusal of the officers thereof to issue permits for burials." The judgment of the trial court was in favor of the city, and, in affirming this judgment, the appellate court said:

It is undisputed by appellants that the passage of the ordinance in question was an act by the city of Whittier in the exercise of a governmental function. In such circumstances, in the absence of any statute to the contrary, the principle of law is well established that an action for damages against the city will not lie. (18 Cal. Jur. 1091, 19 R. C. L. 1083.)

### DEATHS DURING WEEK ENDED DECEMBER 12, 1931

*Summary of information received by telegraph from industrial insurance companies for the week ended December 12, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Dec 12, 1931	Corresponding week, 1930
Policies in force.....	74, 343, 907	75, 006, 785
Number of death claims.....	13, 176	14, 526
Death claims per 1,000 policies in force, annual rate.....	9. 2	10. 1
Death claims per 1,000 policies, first 50 weeks of year, annual rate.....	9. 6	9. 6

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 12, 1931; infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Dec. 12, 1931				Corresponding week, 1930		Death rate <sup>1</sup> for the first 50 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>2</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1931	1930
Total (22 cities).....	7,709	11.3	621	4.49	11.7	697	11.8	11.0
Akron.....	35	8.9	2	20	9.4	6	7.5	7.8
Albany.....	31	12.5	3	60	15.5	3	14.0	14.5
Atlanta.....	56	10.5	6	59	16.5	11	14.9	15.8
White.....	26	7.4	5	75	11.8	3	11.5	11.3
Colored.....	30	16.8	1	29	25.9	8	21.6	23.4
Baltimore.....	195	12.5	17	59	12.2	12	14.1	14.1
White.....	139	10.9	8	36	11.6	10	12.9	12.0
Colored.....	56	19.9	9	144	15.3	2	19.9	19.7
Birmingham.....	55	10.6	4	40	9.2	4	13.1	13.3
White.....	22	6.9	4	08	7.1	1	10.0	10.0
Colored.....	33	16.8	0	0	12.5	3	18.0	19.2
Boston.....	210	13.9	20	58	14.1	18	14.1	14.1
Bridgeport.....	25	8.9	3	50	10.7	4	11.0	10.9
Buffalo.....	153	13.7	16	72	11.1	14	12.8	12.9
Cambridge.....	21	9.6	2	41	11.9	3	12.0	11.8
Camden.....	40	17.5	5	87	12.3	5	14.2	13.4
Canton.....	18	8.8	2	49	8.4	2	9.9	9.8
Chicago.....	688	10.4	64	57	10.8	61	10.5	10.4
Cincinnati.....	130	14.8	14	84	14.3	7	15.7	15.5
Cleveland.....	140	8.0	12	35	10.1	15	11.0	11.0
Columbus.....	63	11.1	2	19	15.4	9	13.5	15.3
Dallas.....	54	10.3	5	---	10.5	7	11.1	11.4
White.....	42	9.7	2	---	10.1	6	9.8	10.5
Colored.....	12	13.2	3	---	12.7	1	17.3	16.1
Dayton.....	37	8.3	3	43	10.1	1	10.5	9.6
Denver.....	70	12.5	1	10	16.8	3	13.8	14.9
Des Moines.....	37	13.4	3	57	10.6	3	11.0	11.6
Detroit.....	238	7.5	27	43	8.5	46	8.1	9.2
Duluth.....	19	9.7	3	81	14.4	2	11.2	11.5
El Paso.....	27	13.4	6	---	18.2	9	15.1	17.0
Erie.....	32	14.2	0	0	8.1	2	10.3	11.0
Fall River.....	22	10.0	3	71	8.6	0	11.1	11.5
Flint.....	12	3.8	0	0	5.6	5	6.8	9.0
Forth Worth.....	32	10.0	2	---	10.5	3	10.5	10.8
White.....	25	9.3	1	---	6.8	2	10.1	10.3
Colored.....	7	13.4	1	---	29.6	1	12.3	13.9
Grand Rapids.....	27	8.2	3	46	11.7	3	9.0	10.1
Houston.....	48	8.1	4	---	13.6	10	11.0	12.2
White.....	32	7.4	3	---	11.8	5	10.1	10.8
Colored.....	16	10.1	1	---	18.6	5	13.4	16.0
Indianapolis.....	81	11.4	8	61	10.6	5	13.6	14.4
White.....	71	11.4	8	70	9.9	4	13.1	13.4
Colored.....	10	11.5	0	0	15.3	1	17.0	21.2
Jersey City.....	65	10.6	3	27	9.0	6	11.2	11.3
Kansas City, Kans.....	30	12.7	4	88	12.0	1	12.6	11.7
White.....	23	12.1	3	80	13.1	1	11.9	11.0
Colored.....	7	15.5	1	127	6.8	0	15.5	14.8
Kansas City, Mo.....	105	13.4	6	48	12.6	3	12.9	13.2
Knoxville.....	37	17.7	2	43	14.7	1	12.6	13.5
White.....	28	16.0	2	49	12.9	1	11.8	12.5
Colored.....	9	26.4	0	0	24.1	0	16.5	18.4
Long Beach.....	26	8.9	1	25	14.5	3	9.8	10.1
Los Angeles.....	363	14.4	23	67	10.7	28	10.7	11.0
Louisville.....	78	13.2	6	55	8.3	3	13.7	13.4
White.....	67	13.4	4	42	6.6	3	12.3	12.0
Colored.....	11	12.0	2	143	17.6	0	21.2	21.5
Lowell.....	30	15.6	1	26	12.0	1	12.8	13.3
Lynn.....	25	12.7	3	86	15.3	2	9.4	10.4
Memphis.....	77	15.5	13	138	14.8	9	16.4	16.8
White.....	34	11.1	7	118	14.3	4	13.4	13.2
Colored.....	43	22.7	6	174	15.6	5	21.4	22.7
Miami.....	24	11.1	3	77	13.2	1	11.6	11.0
White.....	20	12.0	0	0	11.5	1	10.8	9.7
Colored.....	4	8.2	3	272	18.6	0	14.5	15.4

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 12, 1931; infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended Dec 12, 1931				Corresponding week, 1930		Death rate <sup>2</sup> for the first 50 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1931	1930
Milwaukee.....	88	7.7	8	36	9.6	11	9.1	9.6
Minneapolis.....	96	10.6	6	39	13.4	14	10.9	10.7
Nashville.....	56	18.8	11	166	14.2	3	16.7	16.5
White.....	35	16.2	5	99	12.2	3	14.4	13.9
Colored.....	21	25.6	6	377	19.4	0	23.0	23.1
New Bedford.....	24	11.1	1	26	8.8	2	12.0	11.0
New Haven.....	39	12.5	1	15	9.3	3	12.5	12.5
New Orleans.....	136	15.2	13	73	17.2	18	16.5	17.3
White.....	78	12.2	5	42	13.8	11	13.5	14.3
Colored.....	58	22.5	8	132	25.7	7	24.1	24.9
New York.....	1,392	10.2	88	38	10.6	119	11.0	10.7
Bronx Borough.....	215	8.4	14	40	7.3	12	8.1	7.8
Brooklyn Borough.....	490	9.7	31	33	9.5	33	10.1	9.8
Manhattan Borough.....	514	14.8	34	45	16.3	54	16.5	15.9
Queens Borough.....	140	6.3	7	28	7.4	16	7.1	7.0
Richmond Borough.....	33	10.5	2	38	12.1	4	13.4	13.8
Newark, N. J.....	95	11.1	5	27	11.7	4	11.4	12.0
Oakland.....	69	12.3	9	113	11.5	2	10.7	11.0
Oklahoma City.....	38	10.1	7	98	10.0	1	10.6	10.9
Omaha.....	50	12.0	5	58	16.5	7	13.8	13.5
Paterson.....	36	13.5	4	68	8.3	2	13.2	12.0
Peoria.....	23	11.1	1	20	13.8	5	12.4	12.3
Philadelphia.....	434	11.5	39	57	12.3	48	12.8	12.6
Pittsburgh.....	170	13.1	16	56	15.0	19	14.3	13.8
Portland, Oreg.....	83	14.1	3	37	11.4	3	11.6	12.1
Providence.....	81	16.6	7	64	10.7	5	12.6	12.8
Richmond.....	53	15.0	5	73	15.7	6	15.3	14.9
White.....	33	13.1	2	44	10.8	3	12.9	12.2
Colored.....	20	16.7	3	130	27.5	2	21.4	21.4
Rochester.....	69	10.8	4	37	8.7	4	11.7	11.5
St. Louis.....	187	11.8	11	40	13.4	7	14.8	14.0
St. Paul.....	46	8.7	2	21	10.7	2	10.4	10.1
Salt Lake City.....	31	11.3	1	15	14.8	4	12.0	12.6
San Antonio.....	55	11.9	8	15	15.2	5	14.1	15.8
San Diego.....	43	14.3	3	62	15.7	1	13.6	14.5
San Francisco.....	173	13.9	8	53	13.9	9	12.9	13.0
Schenectady.....	23	12.5	0	0	10.3	2	10.9	11.1
Seattle.....	83	11.6	3	30	12.4	8	11.3	10.9
Somerville.....	24	11.9	2	62	10.5	3	8.8	9.6
South Bend.....	13	6.3	1	26	9.9	3	8.0	9.0
Spokane.....	34	15.2	1	26	9.9	0	12.4	12.4
Springfield, Mass.....	32	10.9	1	17	11.1	2	11.4	12.0
Syracuse.....	42	10.3	4	49	10.4	4	11.5	11.6
Tacoma.....	25	12.1	2	56	18.5	2	12.3	12.5
Toledo.....	72	12.6	4	38	13.6	8	11.8	12.6
Trenton.....	37	15.6	2	37	17.3	5	16.2	16.6
Utica.....	29	14.8	3	84	8.7	0	14.2	14.5
Washington, D. C.....	140	14.9	14	78	14.2	9	15.9	15.2
White.....	82	12.0	3	25	11.2	6	13.5	13.0
Colored.....	58	22.4	11	188	22.3	3	22.1	20.9
Waterbury.....	13	6.7	0	0	9.9	2	9.5	9.5
Wilmington, Del.....	39	19.1	5	113	14.7	4	13.8	14.4
Worcester.....	40	10.6	2	29	13.6	3	12.0	12.7
Yonkers.....	24	9.0	2	48	8.9	5	8.3	8.1
Youngstown.....	16	4.8	4	55	11.0	3	9.8	10.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 77 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended December 19, 1931, and December 20, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 19, 1931, and December 20, 1930

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930
<b>New England States:</b>								
Maine.....	18	5	9	2	131	37	1	0
New Hampshire.....	1	1				26	0	0
Vermont.....		3			101		0	0
Massachusetts.....	67	79	7	6	204	308	3	1
Rhode Island.....	4	7			390		0	0
Connecticut.....	9	14	8	2	67	77	3	0
<b>Middle Atlantic States:</b>								
New York.....	156	118	13	23	447	136	7	10
New Jersey.....	35	79	8	18	46	140	1	1
Pennsylvania.....	146	147			681	457	6	7
<b>East North Central States:</b>								
Ohio.....	92	42	7	9	59	87	1	0
Indiana.....	77	38	15	12	38	125	9	3
Illinois.....	135	173	3	8	36	290	4	11
Michigan.....	58	64	3	8	43	49	3	5
Wisconsin.....	23	21		24	39	197	1	1
<b>West North Central States:</b>								
Minnesota.....	27	20			24	5	0	1
Iowa.....	45	17			3	4	1	2
Missouri.....	102	40	4	4	6	732	8	6
North Dakota.....	5	2			7		0	0
South Dakota.....	2	13			80	2	0	0
Nebraska.....	15	18	4	8	6		0	0
Kansas.....	54	15	1	1	11	7	0	1
<b>South Atlantic States:</b>								
Delaware.....	9	3			1	2	0	0
Maryland.....	58	32	24	14	6	38	2	1
District of Columbia.....	16	14	1	1		16	0	0
West Virginia.....	65	34	18	26	281	23	3	0
North Carolina.....	71	76	8	16	55	52	1	0
South Carolina.....	13	19	406	516	36		0	0
Georgia.....	26	16	49	81	1	25	0	2
Florida.....	9	24	1	1		38	1	1
<b>East South Central States:</b>								
Kentucky.....	62						1	0
Tennessee.....	73	19	25	76	19	29	2	1
Alabama.....	71	43	19	91	7	61	2	0
Mississippi.....	21	20					0	2
<b>West South Central States:</b>								
Arkansas.....	30	5	15	28			0	0
Louisiana.....	44	26	9	10	8		2	1
Oklahoma.....	72	55	43	62		45	0	2
Texas.....	106	55	14	60	4	51	0	1

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, 1931, 5 cases: 2 cases in South Carolina, 1 case in Georgia, 1 case in Alabama, and 1 case in California.

<sup>4</sup> Figures for 1931 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 19, 1931, and December 20, 1930—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930
<b>Mountain States:</b>								
Montana.....	1	5			104	1	1	1
Idaho.....	2				1	10	1	1
Wyoming.....		2		2	1	1	0	0
Colorado.....	3	10			4	17	0	0
New Mexico.....	13	10	1	16	6	76	0	0
Arizona.....	11	5	5	2	1	15	0	4
Utah.....	1	2	7	18		2	0	2
<b>Pacific States:</b>								
Washington.....	4	24			100	20	1	0
Oregon.....	1	7	57	10	3	46	0	0
California.....	105	61	104	73	99	223	4	5
Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930	Week ended Dec 19, 1931	Week ended Dec 20, 1930
<b>New England States:</b>								
Maine.....	0	0	28	33	0	0	2	7
New Hampshire.....	0	0	12	1	0	0	0	1
Vermont.....	0	0	7	5	10	0	0	0
Massachusetts.....	8	8	369	206	0	0	5	4
Rhode Island.....	0	0	26	22	0	0	0	0
Connecticut.....	0	0	58	87	32	0	4	2
<b>Middle Atlantic States:</b>								
New York.....	15	3	476	464	5	4	23	16
New Jersey.....	5	1	142	172	0	0	3	4
Pennsylvania.....	9	5	468	450	0	0	28	20
<b>East North Central States:</b>								
Ohio.....	3	3	326	367	20	49	6	19
Indiana.....	0	0	95	190	10	71	5	5
Illinois.....	6	6	307	344	18	61	5	16
Michigan.....	3	3	240	191	14	45	8	5
Wisconsin.....	0	12	63	146	3	7	3	6
<b>West North Central States:</b>								
Minnesota.....	9	7	63	55	3	13	0	1
Iowa.....	3	3	43	40	83	33	1	3
Missouri.....	1	1	74	131	6	7	5	8
North Dakota.....	0	0	28	21	22	9	0	2
South Dakota.....	0	2	19	17	11	16	1	1
Nebraska.....	1	3	23	61	5	81	4	1
Kansas.....	1	1	82	50	3	33	3	5
<b>South Atlantic States:</b>								
Delaware.....	1	0	1	11	0	0	1	0
Maryland.....	0	0	87	92	0	0	11	10
District of Columbia.....	0	1	25	22	0	0	0	2
West Virginia.....	1	2	65	53	4	9	31	18
North Carolina.....	3	1	99	65	1	3	8	8
South Carolina.....	1	1	13	21	0	0	11	11
Georgia.....	1	0	28	51	6	0	14	5
Florida.....	1	1	4	12	1	0	0	1
<b>East South Central States:</b>								
Kentucky.....	0	1	93	34	0	0	6	13
Tennessee.....	0	0	54	29	4	2	21	2
Alabama.....	2	0	59	54	0	1	9	2
Mississippi.....	0	0	13	21	18	4	2	7
<b>West South Central States:</b>								
Arkansas.....	0	0	11	8	0	3	10	18
Louisiana.....	0	0	26	15	1	6	19	25
Oklahoma.....	0	2	40	44	0	51	11	25
Texas.....	0	4	73	43	7	22	12	13

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 1931, 5 cases: 2 cases in South Carolina, 1 case in Georgia, 1 case in Alabama, and 1 case in California.

<sup>3</sup> Figures for 1931 are exclusive of Oklahoma City and Tulsa.



*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 19, 1931, and December 20, 1930—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930	Week ended Dec. 19, 1931	Week ended Dec. 20, 1930
<b>Mountain States:</b>								
Montana.....	1	0	36	26	2	26	3	0
Idaho.....	0	1	6	4	0	1	0	0
Wyoming.....	0	0	10	21	0	1	0	0
Colorado.....	0	0	21	10	0	0	3	0
New Mexico.....	0	1	8	5	0	1	2	1
Arizona.....	0	0	9	9	0	2	0	2
Utah.....	0	0	18	8	0	0	1	1
<b>Pacific States:</b>								
Washington.....	1	0	50	51	10	18	0	3
Oregon.....	0	0	19	4	11	1	0	0
California <sup>1</sup> .....	2	19	127	84	2	54	6	10

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 1931, 5 cases; 2 cases in South Carolina, 1 case in Georgia, 1 case in Alabama, and 1 case in California.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Mea- sles	Pel- lagra	Pollo- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>October, 1931</i>										
Arkansas.....	1	233	3	182	16	20	1	116	10	76
<i>November, 1931</i>										
Alabama.....	11	397	101	175	26	20	4	247	2	89
Idaho.....	1	20					0	46	3	3
Indiana.....	3	261	21	3	138		3	415	31	27
Maryland.....	3	289	48	2	21		7	432	0	94
New Jersey.....	9	134	40	3	122		46	499	1	21
New Mexico.....	3	89	1	9	9	1	0	51	1	37
North Dakota.....	3	16	5		7		5	79	73	20
Ohio.....	8	568	72	3	234		20	2,005	55	135
Pennsylvania.....	18	508		5	1,352	2	56	1,603	0	242
Porto Rico.....		66	103	8,158	79	3	1		0	17
South Carolina.....		340	1,509	1,116	38	160	7	62	1	38
West Virginia.....	3	228	55		730			249	2	152

<i>October, 1931</i>		Cases	<i>October, 1931</i>		Cases
<b>Arkansas:</b>			<b>Chicken pox—Continued.</b>		
Chicken pox.....		15	North Dakota.....		126
Mumps.....		7	Ohio.....		1,836
Trachoma.....		41	Pennsylvania.....		2,504
Whooping cough.....		9	Porto Rico.....		6
			South Carolina.....		84
			West Virginia.....		283
<i>November, 1931</i>			<b>Colibacillosis:</b>		
<b>Anthrax:</b>			Porto Rico.....		2
Ohio.....		1	<b>Conjunctivitis:</b>		
<b>Chicken pox:</b>			New Mexico.....		1
Alabama.....		67	<b>Dengue:</b>		
Idaho.....		87	South Carolina.....		7
Indiana.....		408	<b>Diarrhea:</b>		
Maryland.....		250	Maryland.....		25
New Jersey.....		524	South Carolina.....		332
New Mexico.....		118			

Diarrhea and enteritis (under 2 years):	Cases	Rabies in animals:	Cases
Ohio.....	29	Maryland.....	2
Dysentery:		South Carolina.....	9
Maryland.....	22	Scabies:	
Ohio.....	1	Maryland.....	20
Pennsylvania.....	3	Septic sore throat:	
Porto Rico.....	105	Idaho.....	6
Filariasis:		Maryland.....	11
Porto Rico.....	81	New Mexico.....	1
Food poisoning:		Ohio.....	81
Ohio.....	5	Tetanus:	
German measles:		Maryland.....	3
Maryland.....	14	New Jersey.....	1
New Jersey.....	23	New Mexico.....	1
New Mexico.....	1	Ohio.....	1
Ohio.....	12	Pennsylvania.....	2
Pennsylvania.....	52	Porto Rico.....	6
Hookworm disease:		Tetanus, infantile:	
Pennsylvania.....	1	Porto Rico.....	18
South Carolina.....	74	Trachoma:	
Impetigo contagiosa:		Indiana.....	1
Maryland.....	61	Maryland.....	1
North Dakota.....	3	New Jersey.....	2
Lead poisoning:		New Mexico.....	1
New Jersey.....	1	North Dakota.....	1
Ohio.....	14	Ohio.....	6
Lethargic encephalitis:		Pennsylvania.....	6
Alabama.....	1	Porto Rico.....	15
Maryland.....	1	Trichinosis:	
New Jersey.....	1	New Jersey.....	2
Ohio.....	7	Tularaemia	
Pennsylvania.....	3	Indiana.....	1
South Carolina.....	2	Maryland.....	2
Mumps:		Ohio.....	4
Alabama.....	22	West Virginia.....	3
Idaho.....	72	Typhus fever:	
Indiana.....	63	Alabama.....	13
Maryland.....	123	South Carolina.....	1
New Jersey.....	87	Undulant fever:	
New Mexico.....	17	Indiana.....	4
North Dakota.....	33	Maryland.....	4
Ohio.....	547	New Jersey.....	10
Pennsylvania.....	1,108	New Mexico.....	1
Porto Rico.....	8	Ohio.....	3
South Carolina.....	58	Pennsylvania.....	2
Ophthalmia neonatorum:		Vincent's angina.	
Maryland.....	3	Maryland.....	12
New Jersey.....	4	North Dakota.....	40
Ohio.....	50	Whooping cough:	
Pennsylvania.....	14	Alabama.....	61
Porto Rico.....	8	Indiana.....	137
South Carolina.....	11	Maryland.....	599
Paratyphoid fever.		New Jersey.....	641
Ohio.....	1	New Mexico.....	2
Porto Rico.....	4	North Dakota.....	23
South Carolina.....	5	Ohio.....	1,321
Puerperal septicaemia:		Pennsylvania.....	1,743
Ohio.....	3	Porto Rico.....	192
Pennsylvania.....	21	South Carolina.....	72
Porto Rico.....	8	West Virginia.....	213
		Yaws:	
		Porto Rico.....	70

## RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of November, 1931 by departments of health of States named to other State health departments*

Disease	California	Connecticut	Illinois	Massachusetts	Minnesota	New York
Diphtheria.....						1
Leprosy.....	1					
Lethargic encephalitis.....				1		
Malaria.....		1				
Meningococcus meningitis.....						1
Poliomyelitis.....					3	
Scarlet fever.....		1				
Syphilis.....					1	
Tuberculosis.....	5		4		30	
Typhoid fever.....	1			1	2	1
Undulant fever.....		1				

## ADMISSIONS TO HOSPITALS FOR THE INSANE, SEPTEMBER, 1929

Reports for the month of September, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 118 hospitals, located in 41 States, the District of Columbia, and the Territory of Hawaii. The 118 hospitals had 184,242 patients on September 30, 1929, 97,889 males and 86,353 females, the ratio being 113 males per 100 females.

The following table shows the number of new admissions for the month of September, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	6	1	7
2. Senile psychoses.....	179	132	311
3. Psychoses with cerebral arteriosclerosis.....	182	94	276
4. General paralysis.....	210	70	280
5. Psychoses with cerebral syphilis.....	26	13	39
6. Psychoses with Huntington's chorea.....	3	4	7
7. Psychoses with brain tumor.....	2	0	2
8. Psychoses with other brain or nervous disease.....	23	17	40
9. Alcoholic psychoses.....	131	16	147
10. Psychoses due to drugs and other exogenous toxins.....	9	9	18
11. Psychoses with pellagra.....	17	29	46
12. Psychoses with other somatic diseases.....	28	38	66
13. Manic-depressive psychoses.....	174	248	422
14. Involution melancholia.....	20	42	62
15. Dementia praecox (schizophrenia).....	350	265	615
16. Paranoia and paranoid conditions.....	37	52	89
17. Epileptic psychoses.....	40	36	76
18. Psychoneuroses and neuroses.....	20	43	63
19. Psychoses with psychopathic personality.....	14	8	22
20. Psychoses with mental deficiency.....	64	58	122
21. Undiagnosed psychoses.....	139	79	218
22. Without psychosis.....	154	60	214
Total.....	1,828	1,314	3,142

During the month of September, 1929, there were 3,142 new admissions to the hospitals, 58.2 per cent of these being males and 41.8 per cent females, the ratio being 139 males per 100 females. Four hundred and thirty-two of the new admissions were reported as undiagnosed or "without psychosis." There were 2,710 new admissions for which provisional diagnoses were made. Of these 2,710

patients, cases of dementia præcox constituted 22.7 per cent; manic-depressive psychoses, 15.6 per cent; senile psychoses, 11.5 per cent; general paralysis, 10.3 per cent; and psychoses with cerebral arteriosclerosis, 10.2 per cent. These five classes accounted for 70.3 per cent of the new admissions for which diagnoses were given.

The following table shows the number of patients in the hospitals and on parole on September 30, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals.....	87,340	78,117	165,457
On parole or otherwise absent, but still on books.....	10,549	8,236	18,785
Total.....	97,889	86,353	184,242

Of the 184,242 patients, 10,549 males and 8,236 females were on parole or otherwise absent but still on the books at the end of the month—10.8 per cent of the males, 9.5 per cent of the females, and 10.2 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,400,000. The estimated population of the 90 cities reporting deaths is more than 31,855,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended December 12, 1931, and December 13, 1930*

	1931	1930	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	2,225	1,718	-----
97 cities.....	593	550	964
Measles:			
45 States.....	3,306	3,213	-----
97 cities.....	755	1,021	-----
Meningococcus meningitis.			
46 States.....	81	121	-----
97 cities.....	35	47	-----
Poliomyelitis:			
46 States.....	97	80	-----
Scarlet fever:			
46 States.....	4,050	4,271	-----
97 cities.....	1,426	1,409	1,123
Smallpox:			
46 States.....	264	493	-----
97 cities.....	24	90	27
Typhoid fever:			
46 States.....	368	344	-----
97 cities.....	57	50	47
<i>Deaths reported</i>			
Influenza and pneumonia:			
90 cities.....	647	693	-----
Smallpox:			
90 cities.....	0	0	-----

## City reports for week ended December 12, 1931

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	5	0	2	-----	0	26	1	3
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	0
Nashua.....	0	1	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	0	0
Massachusetts:								
Boston.....	42	39	20	4	0	1	16	17
Fall River.....	3	4	2	1	1	0	0	0
Springfield.....	11	5	0	-----	0	0	10	0
Worcester.....	16	6	0	-----	0	0	69	1
Rhode Island:								
Pawtucket.....	0	2	0	-----	0	0	0	0
Providence.....	2	9	4	3	0	245	15	7
Connecticut:								
Bridgeport.....	10	5	1	1	1	0	1	3
Hartford.....	4	6	0	-----	0	0	4	1
New Haven.....	40	1	0	-----	0	1	12	2
MIDDLE ATLANTIC								
New York:								
Buffalo.....	83	15	4	-----	1	4	1	15
New York.....	114	174	101	11	6	17	34	137
Rochester.....	8	4	2	-----	0	32	8	5
Syracuse.....	10	2	0	-----	0	0	1	2
New Jersey:								
Camden.....	7	6	7	-----	0	0	0	0
Newark.....	27	17	2	6	0	2	8	7
Trenton.....	1	2	2	1	1	1	23	2
Pennsylvania:								
Philadelphia.....	100	57	5	8	6	3	18	45
Pittsburgh.....	48	20	9	2	4	139	41	27
Reading.....	13	2	0	-----	0	0	1	1
Scranton.....	3	5	0	-----	0	0	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	19	12	8	-----	0	1	0	8
Cleveland.....	165	39	11	11	1	13	73	7
Columbus.....	8	6	12	-----	0	1	2	0
Toledo.....	81	8	3	1	1	1	0	2
Indiana:								
Fort Wayne.....	0	4	7	-----	0	0	0	2
Indianapolis.....	79	10	3	-----	0	1	47	10
South Bend.....	5	1	0	-----	0	0	0	0
Terre Haute.....	3	1	3	-----	0	0	0	1
Illinois:								
Chicago.....	96	121	64	11	4	12	3	51
Peoria.....	9	-----	4	-----	0	1	0	1
Springfield.....	2	2	1	-----	0	1	0	1
Michigan:								
Detroit.....	51	55	30	3	0	6	5	20
Flint.....	23	2	0	-----	0	1	41	1
Grand Rapids.....	4	1	0	-----	0	0	0	1

## City reports for week ended December 12, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha.....	4	1	1	-----	0	1	1	0
Madison.....	11	2	5	-----	-----	0	1	-----
Milwaukee.....	59	15	2	-----	0	9	50	5
Racine.....	22	2	0	-----	0	0	26	0
Superior.....	14	1	0	-----	0	0	8	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	7	0	0	-----	0	0	0	1
Minneapolis.....	74	18	8	-----	1	4	28	6
St. Paul.....	26	6	5	-----	0	0	0	6
Iowa:								
Davenport.....	4	0	0	-----	-----	0	0	-----
Des Moines.....	2	2	10	-----	-----	1	0	-----
Sioux City.....	13	1	6	-----	-----	0	0	-----
Waterloo.....	18	0	2	-----	-----	1	1	-----
Missouri:								
Kansas City.....	25	8	12	-----	0	2	0	10
St. Joseph.....	6	1	4	-----	0	0	1	3
St. Louis.....	19	42	30	-----	1	0	1	5
North Dakota:								
Fargo.....	11	0	0	-----	1	13	0	0
Grand Forks.....	7	0	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	33	0	0	-----	-----	22	0	-----
Nebraska:								
Omaha.....	22	8	9	-----	0	2	2	5
Kansas:								
Topeka.....	4	1	2	-----	0	1	1	0
Wichita.....	15	2	10	-----	0	1	0	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	4	2	1	-----	0	2	0	3
Maryland:								
Baltimore.....	23	24	15	11	1	5	31	21
Cumberland.....	0	1	0	-----	0	0	0	1
Frederick.....	0	1	6	-----	0	0	0	0
District of Columbia:								
Washington.....	4	18	11	2	2	2	0	11
Virginia:								
Lynchburg.....	1	3	3	-----	0	0	2	1
Norfolk.....	0	2	5	-----	0	0	1	1
Richmond.....	0	12	8	-----	1	0	0	5
Roanoke.....	7	3	2	-----	0	0	0	4
West Virginia:								
Charleston.....	18	1	2	-----	0	0	0	5
Huntington.....	1	-----	5	-----	0	0	0	0
Wheeling.....	6	1	0	-----	0	1	0	2
North Carolina:								
Raleigh.....	1	2	2	-----	0	1	0	1
Wilmington.....	3	2	0	-----	0	0	0	1
Winston-Salem.....	1	3	1	-----	1	0	1	1
South Carolina:								
Charleston.....	0	0	0	33	0	0	0	4
Columbia.....	0	1	0	-----	0	0	0	2
Greenville.....	0	-----	0	-----	0	0	0	0
Georgia:								
Atlanta.....	5	7	3	12	0	0	0	5
Brunswick.....	0	0	0	-----	0	0	1	1
Savannah.....	0	3	6	-----	1	0	0	2
Florida:								
Miami.....	1	2	1	-----	0	1	0	1
Tampa.....	0	2	0	1	0	0	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	2	1	1	-----	0	0	0	2
Lexington.....	0	-----	3	-----	0	1	1	1

## City reports for week ended December 12, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL—Continued								
Tennessee:								
Memphis.....	4	7	18	-----	0	0	1	4
Nashville.....	1	2	1	-----	2	0	0	5
Alabama:								
Birmingham.....	2	7	6	7	1	1	0	6
Mobile.....	0	3	1	-----	1	0	0	1
Montgomery.....	0	2	1	2	-----	2	2	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	1	3	-----	-----	0	0	-----
Little Rock.....	0	1	5	-----	0	0	0	5
Louisiana:								
New Orleans.....	0	15	17	3	1	0	0	14
Shreveport.....	6	1	5	-----	0	5	1	0
Oklahoma:								
Muskogee.....	0	-----	12	-----	0	0	6	0
Texas:								
Dallas.....	4	18	25	1	1	0	0	4
Fort Worth.....	0	7	11	-----	0	0	0	2
Galveston.....	0	1	3	-----	0	0	0	0
Houston.....	0	10	21	-----	0	0	1	3
San Antonio.....	0	5	6	-----	0	0	0	4
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	61	1	0
Great Falls.....	3	0	0	-----	0	0	0	1
Helena.....	0	0	0	-----	0	28	0	0
Missoula.....	0	0	0	1	1	0	0	0
Idaho:								
Boise.....	3	0	0	-----	0	0	1	0
Colorado:								
Denver.....	36	9	2	-----	3	1	5	8
Pueblo.....	9	0	0	-----	0	1	0	0
New Mexico:								
Albuquerque.....	9	0	0	-----	0	0	0	1
Arizona:								
Phoenix.....	0	0	0	-----	0	0	0	4
Utah:								
Salt Lake City.....	61	4	1	-----	0	2	1	1
Nevada:								
Reno.....	0	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	44	5	0	-----	-----	53	7	-----
Spokane.....	14	1	0	-----	-----	2	0	-----
Tacoma.....	23	3	0	-----	0	3	6	5
Oregon:								
Portland.....	25	11	0	-----	0	4	5	10
Salem.....	5	0	0	3	0	0	0	1
California:								
Los Angeles.....	56	34	29	53	3	2	33	27
Sacramento.....	6	3	2	-----	0	40	1	8
San Francisco.....	69	13	0	22	3	7	2	14

## City reports for week ended December 12, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	2	4	0	0	0	0	0	0	0	3	23
New Hampshire:											
Concord .....	1	6	0	0	0	1	0	0	0	0	11
Nashua .....	0	0	0	0	0	0	0	0	0	0	
Vermont:											
Barrre .....	0	0	0	0	0	1	0	0	0	1	1
Massachusetts:											
Boston .....	63	83	0	0	0	15	1	3	0	37	210
Fall River .....	3	12	0	0	0	1	0	0	0	4	22
Springfield .....	6	8	0	0	0	0	1	1	0	1	24
Worcester .....	12	25	0	0	0	1	0	0	0	16	40
Rhode Island:											
Pawtucket .....	2	0	0	0	0	0	0	0	0	0	20
Providence .....	11	14	0	0	0	3	0	0	0	1	81
Connecticut:											
Bridgeport .....	7	4	0	3	0	2	0	0	0	1	25
Hartford .....	6	5	0	0	0	2	1	0	0	3	42
New Haven .....	3	4	0	0	0	0	0	0	0	8	59
MIDDLE ATLANTIC											
New York:											
Buffalo .....	23	41	1	0	0	2	1	0	0	27	148
New York .....	138	163	0	0	0	68	12	10	3	73	1,392
Rochester .....	9	48	0	0	0	1	1	0	0	7	65
Syracuse .....	9	11	0	0	0	0	0	0	0	68	42
New Jersey:											
Camden .....	4	8	0	0	0	0	0	0	0	3	40
Newark .....	14	10	0	0	0	0	1	0	1	36	99
Trenton .....	3	5	0	0	0	3	0	0	0	0	57
Pennsylvania:											
Philadelphia .....	70	91	0	0	0	24	3	1	1	109	434
Pittsburgh .....	39	63	0	0	0	2	0	2	1	25	170
Reading .....	3	4	0	0	0	0	0	0	0	4	17
Scranton .....		10		0	0	0		0	0	1	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati .....	17	45	0	0	0	9	1	1	0	4	120
Cleveland .....	35	51	1	0	0	13	1	1	0	123	140
Columbus .....	11	14	0	0	0	1	0	0	0	15	63
Toledo .....	12	6	0	6	0	4	0	0	0	33	72
Indiana:											
Fort Wayne .....	3	1	0	0	0	1	0	1	0	1	26
Indianapolis .....	13	4	3	0	0	3	0	0	0	12	
South Bend .....	3	1	0	0	0	0	0	0	0	0	13
Terre Haute .....	3	2	0	0	0	0	0	0	0	0	10
Illinois:											
Chicago .....	112	180	1	4	0	47	2	2	0	179	688
Peoria .....		4		0	0	1		0	0	22	23
Springfield .....	2	6	0	0	0	1	0	0	0	1	25
Michigan:											
Detroit .....	88	95	0	0	0	19	1	0	1	94	238
Flint .....	11	14	0	0	0	0	0	0	0	13	12
Grand Rapids .....	9	7	0	0	0	0	0	0	0	6	27
Wisconsin:											
Kenosha .....	2	3	0	0	0	0	0	0	0	1	7
Madison .....	3	1	0	0	0		0	0	0	2	
Milwaukee .....	21	27	0	0	0	6	0	0	0	100	88
Racine .....	4	1	0	0	0	0	0	0	0	7	10
Superior .....	3	2	0	0	0	1	0	0	0	0	9
WEST NORTH CENTRAL											
Minnesota:											
Duluth .....	9	2	0	0	0	0	0	0	0	2	19
Minneapolis .....	43	18	0	0	0	2	1	1	0	15	96
St. Paul .....	20	5	1	0	0	0	1	0	0	2	60



## City reports for week ended December 12, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport.....	1	2	1	0	-----	-----	0	0	-----	0	-----
Des Moines.....	10	5	1	0	-----	-----	0	0	-----	0	87
Sioux City.....	1	3	1	7	-----	-----	0	1	-----	6	-----
Waterloo.....	2	1	0	0	-----	-----	0	0	-----	2	-----
Missouri:											
Kansas City....	14	12	0	0	0	5	0	0	0	14	106
St. Joseph.....	3	2	1	0	0	0	0	0	0	1	21
St. Louis.....	36	19	1	0	0	14	2	0	0	52	187
North Dakota:											
Fargo.....	3	2	0	0	0	0	0	0	0	1	4
Grand Forks....	0	0	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	0	2	0	0	-----	-----	0	0	-----	0	-----
Nebraska:											
Omaha.....	7	9	2	0	0	2	0	1	1	0	50
Kansas:											
Topeka.....	2	0	0	0	0	1	0	0	0	5	22
Wichita.....	4	2	0	0	0	1	0	0	0	1	26
SOUTH ATLANTIC											
Delaware:											
Wilmington....	5	1	0	0	0	3	0	0	0	3	39
Maryland:											
Baltimore.....	25	17	0	0	0	18	2	4	0	132	195
Cumberland....	1	4	0	0	0	0	0	0	0	0	15
Frederick.....	1	4	0	0	0	0	1	3	0	0	4
District of Col.:											
Washington....	19	21	0	0	0	12	0	1	1	16	140
Virginia:											
Lynchburg.....	3	2	0	0	0	0	0	1	0	7	11
Norfolk.....	3	3	0	0	0	1	0	0	0	0	-----
Richmond.....	8	15	0	0	0	2	1	0	0	0	51
Roanoke.....	3	1	0	0	0	0	1	0	0	0	18
West Virginia:											
Charleston.....	2	1	0	0	0	0	0	1	1	8	22
Huntington....	-----	3	-----	0	0	0	-----	0	0	0	-----
Wheeling.....	2	4	0	0	0	0	0	0	0	3	17
North Carolina:											
Raleigh.....	1	2	0	0	0	1	0	0	0	0	19
Wilmington....	6	1	0	0	0	0	0	0	0	7	7
Winston-Salem..	3	2	0	0	0	2	0	0	0	2	20
South Carolina:											
Charleston.....	1	0	0	0	0	3	1	0	0	0	25
Columbia.....	0	0	0	0	0	2	0	0	0	0	13
Greenville.....	-----	2	-----	0	0	0	-----	0	0	0	-----
Georgia:											
Atlanta.....	6	8	1	0	0	4	0	1	0	0	56
Brunswick.....	0	0	0	0	0	0	0	0	0	0	4
Savannah.....	1	3	1	0	0	1	0	2	0	0	29
Florida:											
Miami.....	2	0	0	0	0	2	0	0	0	0	24
Tampa.....	0	3	0	0	0	0	0	1	0	0	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	4	9	0	0	0	0	0	0	0	0	12
Lexington.....	-----	1	-----	0	0	1	-----	0	0	3	21
Tennessee:											
Memphis.....	7	11	0	0	0	4	1	0	0	26	77
Nashville.....	2	5	0	0	0	1	1	2	0	5	56
Alabama:											
Birmingham....	4	6	1	0	0	6	1	1	0	0	55
Mobile.....	0	5	0	0	0	1	0	0	0	0	18
Montgomery....	0	7	0	0	-----	-----	0	0	-----	0	-----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith....	1	0	0	0	-----	-----	0	1	-----	0	-----
Little Rock....	2	2	0	0	0	3	0	0	0	4	8
Louisiana:											
New Orleans....	8	16	0	3	0	11	2	5	1	1	136
Shreveport.....	2	2	0	0	0	1	1	0	0	2	28

12 nonresidents.

## City reports for week ended December 12, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL—continued											
Oklahoma:											
Muskogee.....		1		1	0	0		0	0	6	
Texas:											
Dallas.....	8	14	1	0	0	1	0	2	0	0	54
Fort Worth.....	2	11	0	0	0	2	0	1	0	1	32
Galveston.....	0	0	0	0	0	0	1	0	0	0	
Houston.....	3	3	1	2	0	5	0	2	0	0	48
San Antonio.....	2	5	0	0	0	6	0	0	0	0	58
MOUNTAIN											
Montana:											
Billings.....	1	1	1	0	0	0	0	0	0	0	7
Great Falls.....	2	1	0	0	0	0	0	0	0	0	7
Helena.....	1	0	0	0	0	0	0	0	0	0	4
Missoula.....	1	1	1	0	0	0	0	0	0	0	5
Idaho:											
Boise.....	1	0	0	0	0	0	0	0	0	0	3
Colorado:											
Denver.....	14	17	0	0	0	7	0	0	0	9	69
Pueblo.....	1	1	0	0	0	0	1	0	0	2	3
New Mexico:											
Albuquerque.....	1	1	0	0	0	5	0	1	0	1	13
Arizona:											
Phoenix.....		0		0	0	2		0	0	0	12
Utah:											
Salt Lake City.....	2	9	1	0	0	3	0	0	0	0	31
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle.....	9	10	0	2			1	2		2	
Spokane.....	8	3	4	0			0	0		0	
Tacoma.....	4	4	2	0	0	0	0	0	0	8	25
Oregon:											
Portland.....	8	3	5	0	0	2	1	3	0	0	83
Salem.....	1	0	0	0	0	0	0	0	0	2	15
California:											
Los Angeles.....	29	51	1	0	0	21	2	1	1	23	363
Sacramento.....	3	3	0	0	0	6	0	0	0	2	47
San Francisco.....	16	7	0	3	0	12	1	0	0	3	161

[illegible]

## City reports for week ended December 12, 1931—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Columbus.....	0	1	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	4	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	4	3	1	0	0	0	0	3	0
Peoria.....	0	0	0	0	0	0	0	1	0
Michigan:									
Detroit.....	0	0	1	0	0	0	0	1	1
Flint.....	1	1	0	0	0	0	0	0	0
Grand Rapids.....	1	1	0	0	0	0	0	0	0
Wisconsin:									
Madison.....	1	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Duluth.....	0	0	0	0	0	0	0	1	0
St. Paul.....	0	0	0	0	0	0	0	2	0
Missouri:									
Kansas City.....	0	0	0	0	1	0	0	0	0
St. Louis.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	0	0	0	0	0	1	1	0	0
District of Columbia:									
Washington.....	1	0	0	0	0	0	0	0	0
Virginia:									
Norfolk.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	0	0	0	0	1	3	0	0	0
Winston-Salem.....	0	0	0	0	1	1	0	0	0
South Carolina:									
Charleston <sup>1</sup> .....	0	0	0	0	2	0	0	0	0
Georgia:									
Atlanta.....	1	1	0	0	0	0	0	1	1
Savannah <sup>1</sup> .....	0	0	0	0	1	1	0	0	0
Florida:									
Miami.....	0	0	0	0	0	1	0	0	0
Tampa <sup>1</sup> .....	1	0	1	0	0	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Lexington.....	0	0	0	0	0	1	0	0	0
Tennessee:									
Memphis.....	1	0	0	0	0	0	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	1	0
<b>WEST SOUTH CENTRAL</b>									
Texas:									
Galveston.....	1	0	0	0	0	0	0	0	0
Houston.....	0	1	0	0	0	0	0	0	0
<b>MOUNTAIN</b>									
Utah:									
Salt Lake City.....	1	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	1	0	0	0	0	0	0	0	0
Oregon:									
Portland.....	0	0	1	0	0	0	1	0	0
California:									
Los Angeles.....	1	1	0	0	1	1	1	0	0
San Francisco.....	3	0	0	0	0	0	0	0	2

<sup>1</sup> Typhus fever, 5 cases and 1 death: 1 case and 1 death at Charleston, S. C.; 1 case at Savannah, Ga.; and 3 cases at Tampa, Fla.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 12, 1931, compared with those for a like period ended December 13, 1930. The population figures used in computing the rates are estimated midyear populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

*Summary of weekly reports from cities, November 8 to December 12, 1931— Annual rates per 100,000 population compared with rates for the corresponding period of 1930<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 14, 1931	Nov. 15, 1930	Nov. 21, 1931	Nov. 22, 1930	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930
98 cities.....	96	89	96	100	84	87	101	90	93	87
New England.....	50	82	70	123	67	87	58	121	70	128
Middle Atlantic.....	52	44	53	52	58	48	54	58	59	47
East North Central.....	80	128	91	124	71	122	94	112	86	120
West North Central.....	184	107	174	110	138	110	222	101	163	97
South Atlantic.....	146	120	172	154	144	66	164	112	118	122
East South Central.....	227	185	169	275	145	138	163	143	163	138
West South Central.....	233	160	206	171	206	153	244	147	287	132
Mountain.....	61	26	17	26	26	79	52	18	26	26
Pacific.....	127	63	98	63	67	95	88	65	61	55

## MEASLES CASE RATES

98 cities.....	55	91	85	126	90	107	113	142	118	162
New England.....	238	172	233	179	315	162	481	220	650	273
Middle Atlantic.....	38	68	92	76	82	69	111	83	89	85
East North Central.....	18	17	29	31	15	28	31	28	28	26
West North Central.....	17	502	19	767	13	649	27	953	46	1,077
South Atlantic.....	10	25	34	64	28	44	43	62	22	80
East South Central.....	12	18	29	149	35	66	35	155	17	299
West South Central.....	24	0	10	3	24	10	27	11	17	11
Mountain.....	400	308	757	326	1,236	282	757	53	809	150
Pacific.....	135	32	149	28	123	10	180	21	210	26

## SCARLET FEVER CASE RATES

98 cities.....	170	187	187	195	155	174	179	202	222	224
New England.....	221	276	260	237	262	264	293	268	397	259
Middle Atlantic.....	131	126	163	159	147	148	155	178	199	188
East North Central.....	215	287	241	263	169	221	229	257	281	315
West North Central.....	149	143	132	219	117	139	161	198	113	209
South Atlantic.....	239	154	259	216	176	188	172	230	176	260
East South Central.....	198	275	145	209	122	215	128	299	250	377
West South Central.....	122	118	78	94	95	132	108	192	142	184
Mountain.....	313	388	218	282	191	229	218	141	261	211
Pacific.....	96	99	129	87	108	83	100	97	153	71

## SMALLPOX CASE RATES

98 cities.....	1	4	1	3	2	8	5	17	4	14
New England.....	0	0	0	0	0	0	55	0	7	0
Middle Atlantic.....	0	0	0	0	0	0	1	0	0	0
East North Central.....	0	2	0	0	0	4	0	1	2	3
West North Central.....	4	21	10	23	11	68	4	48	13	122
South Atlantic.....	0	0	0	0	0	0	0	0	0	0
East South Central.....	6	0	0	0	6	0	0	0	0	0
West South Central.....	3	3	0	3	20	3	3	14	17	17
Mountain.....	9	0	0	44	0	35	0	106	0	150
Pacific.....	4	18	6	6	6	8	10	10	10	6

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.

<sup>2</sup> Shreveport, La., not included.

*Summary of weekly reports from cities, November 8 to December 12, 1931—Annual rates per 100,000 population compared with rates for the corresponding period of 1930—Continued*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Nov. 14, 1931	Nov. 15, 1930	Nov. 21, 1931	Nov. 22, 1930	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930
98 cities.....	12	15	12	15	7	10	7	10	9	18
New England.....	7	24	10	17	2	12	5	7	10	19
Middle Atlantic.....	6	4	8	5	4	3	5	8	6	6
East North Central.....	11	5	5	9	5	4	4	10	3	7
West North Central.....	13	19	8	23	8	8	4	6	6	6
South Atlantic.....	36	34	24	28	34	32	16	18	32	4
East South Central.....	23	48	41	12	6	12	12	12	17	14
West South Central.....	24	87	41	84	7	70	27	26	34	22
Mountain.....	0	26	9	53	0	9	26	9	0	0
Pacific.....	10	10	18	10	2	6	10	10	6	6

## INFLUENZA DEATH RATES

91 cities.....	8	9	7	10	7	9	7	9	8	9
New England.....	14	5	7	7	0	2	2	5	5	5
Middle Atlantic.....	10	8	6	7	9	11	4	6	8	7
East North Central.....	2	9	4	5	5	7	6	8	3	5
West North Central.....	6	6	6	6	3	0	6	12	6	21
South Atlantic.....	6	6	12	24	6	10	6	20	12	24
East South Central.....	0	39	25	13	13	26	38	13	25	26
West South Central.....	7	28	10	36	17	14	7	34	7	11
Mountain.....	27	9	17	62	26	26	9	18	35	9
Pacific.....	12	5	5	7	7	7	19	2	14	7

## PNEUMONIA DEATH RATES

91 cities.....	86	115	101	116	86	109	80	99	98	100
New England.....	101	114	84	126	90	77	91	73	67	119
Middle Atlantic.....	100	129	116	133	98	118	95	101	108	104
East North Central.....	52	85	70	82	52	78	56	77	66	83
West North Central.....	88	78	115	138	106	93	88	132	112	150
South Atlantic.....	97	172	152	156	122	180	146	154	140	134
East South Central.....	151	188	183	175	107	136	95	155	113	123
West South Central.....	55	103	79	114	66	153	135	128	104	162
Mountain.....	148	220	174	167	122	229	122	132	87	159
Pacific.....	70	67	50	50	74	70	77	60	130	60

\* Shreveport, La., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended December 5, 1931.*—The Bureau of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 5, 1931, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup> .....	-----	-----	-----	-----	-----
Nova Scotia.....	-----	8	1	-----	1
New Brunswick.....	-----	-----	-----	-----	1
Quebec.....	-----	-----	9	-----	11
Ontario.....	1	-----	1	5	23
Manitoba.....	-----	-----	-----	-----	4
Saskatchewan.....	-----	-----	-----	9	-----
Alberta.....	-----	-----	-----	1	-----
British Columbia <sup>1</sup> .....	-----	-----	-----	-----	-----
Total.....	1	8	11	15	40

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended December 5, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 5, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	106	Poliomyelitis.....	9
Diphtheria.....	56	Scarlet fever.....	79
Erysipelas.....	2	Tuberculosis.....	27
German measles.....	3	Typhoid fever.....	11
Measles.....	159	Whooping cough.....	23
Mumps.....	27		

### CUBA

*Provinces—Communicable diseases—Four weeks ended October 24, 1931.*—During the four weeks ended October 24, 1931, cases of certain communicable diseases were reported in Cuba as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriento	Total
Diphtheria.....	-----	14	-----	5	1	-----	20
Malaria.....	-----	16	-----	1	24	22	63
Measles.....	-----	70	6	19	1	-----	96
Paratyphoid fever.....	-----	-----	3	5	-----	-----	8
Poliomyelitis.....	-----	2	-----	-----	-----	-----	2
Scarlet fever.....	-----	4	1	2	-----	-----	7
Typhoid fever.....	-----	15	6	18	4	10	53

## JAMAICA

*Communicable diseases—Four weeks ended December 5, 1931.*—During the four weeks ended December 5, 1931, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica outside of Kingston, as follows :

Disease	Kings- ton	Other locali- ties	Disease	Kings- ton	Other locali- ties
Cerebrospinal meningitis .....	1	2	Lethargic encephalitis .....	-----	1
Chicken pox .....	2	28	Puerperal fever .....	-----	2
Dysentery .....	2	6	Smallpox (alastrim) .....	-----	1
Erysipelas .....	-----	1	Tuberculosis .....	35	60
Leprosy .....	-----	3	Typhoid fever .....	5	71

## MEXICO

*Tampico--Communicable diseases—November, 1931.*—During the month of November, 1931, certain communicable diseases were reported in Tampico, Mexico, as follows :

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria .....	6	2	Paratyphoid fever .....	-----	2
Dysentery .....	-----	50	Smallpox .....	1	-----
Influenza .....	19	-----	Tuberculosis .....	66	20
Leprosy .....	2	-----	Typhoid fever .....	3	4
Malaria .....	953	25	Whooping cough .....	18	-----

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases, D, deaths; P, present]

Place	May 31- June 27, 1931	June 28- July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Week ended—													
					October, 1931							November, 1931						
					Sept. 26, 1931	3	10	17	24	31	7	14	21	28	5	12	19	
Ceylon: Colombo.....	1																	
China:	1	3													1	1		
Canton.....		3													1			
Hankow.....	1		2					8	6	18			6					
Shanghai.....		1	7	125	35	29	17	17	8				4				3	
Swatow.....				9	5	8												
Tientsin.....	10	7																
India:	1																	
Bombay.....	18,001	22,074	36,514	39,223	7,552	10,172	4,556											
Calcutta.....	10,337	12,093	20,276	21,683	3,716	4,808	2,450											
Chittagong.....		23	44	42	1	2		4	1						1	3		
Karikal.....		16	25	17	1	2										1	4	
Madras.....	292	237	110	46	18	23	3	7	11	13	16	28	22	19	10	11		
Moulmein.....	163	155	30	15	6	12		5	9	4	10	14	10	11				
Negapatam.....																		
Rangoon.....																		
Vizagapatam.....																		
India (French):																		
Chanderagor.....	3	5	7	2	1				1									
Pondicherry.....	3	3	1	7	1				1									













## SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	May 31-June 27, 1931	June 28-July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- 30, 1931	Week ended—												November, 1931					December, 1931		
					September, 1931					October, 1931					November, 1931					December, 1931				
					5	12	19	26	3	10	17	24	31	7	14	21	28	5	12					
Algeria:																								
Algiers	8	1																						
Constantine		1																						
Belgian Congo	42																							
Brazil: Porto Alegre (alastrim)	5	41	34	7	13	12	16	12	18		16	7	24											
British East Africa: Tanganyika	D	1	1	2	2	2	2	2	2	2	2	3	3											
British South Africa:	D	7	149	19	31	4	6	9	8	2	1,121	53	18											
Northern Rhodesia	D	17				1	4	4			91	2	2											
Southern Rhodesia																								
Canada:	1	21	26		1	2					1													
Alberta																								
British Columbia		1	1					12				1	2	1								2	1	
Manitoba		2	5		1	1																		
Winnipeg		4					1														1	1		
Nova Scotia																								
Ontario:																								
Kingston	32	35	5	4		2		5	2	1	9	7	7	3	5	3	2	5						
Ottawa						1																		
Toronto	1						1		5	2	1	4	4	3	5									
Quebec		1																						
Saskatchewan																								
Regina	54	42	26	5	8	12	5	1	6	3	1	11	3	1	18	12	5	9						
Chile:																								
Antofagasta		1																						
Santiago																								
China:																								
Amoy																								
Canton	4	2	1			1	1	1	1		1	1	1	1	6	2	5	11						
Foochow	3	2	1			1	1	1	1		1	1	1	1	4	4	7							
Hankow	1																							
Manchuria—Kwantung—Dairen	P	P	P	1	P	P	P	P	P		P	P	P	P	P	6	3	2						
Nanking	4	3	3																					
Shanghai	1																							
Foreigners only																								
Including natives	11	3					35	29	17	17	1	6	2	12	16	13								
Tientsin	13	6	1	1	1	1	5	8					1	1		6								



Pondicherry Province.....	7	28	20	1	6	1	18	1	4	14	4	9	18	5	6		
Indo-China (see also table below):																	
Pnompenh.....	2																
Saigon and Cholon.....																	
Saigon.....		3	2	1		3	2	1	4	1			4	2	1	4	6
Cholon.....		1	1	1		2	2	1	2				4	1	2	1	3
Saigon and Cholon.....																	
Saigon.....	1					1											
Baghdad.....																	
Basra.....																	
Mosul Liwa.....	1		1					6								1	
Ivory Coast (see table below):																	
Jamaica.....																	
Japan: Nagoya.....																	
Mexico (see also table below):																	
Jalisco (State)—Guadalajara.....	1	3	2						1	2				2	1	1	2
Mexico City and surrounding territory.....	25	22	10	2	2	1			2	1	2	1	1	1	2	3	
Jalisco (State)—Guadalajara.....	13	8	2			1	1	1	2								
Monterrey.....	1																
Torreón.....	3				1	1	1	1	1						1	5	1
Torreón.....	2																
Morocco (see table below):																	
Netherlands: Friesland—Opsterland.....																	
Nigeria.....																	
Panama: Chiriqui.....																	
Poland.....																	
Portugal: Lisbon.....	3	18															
Rumania (see table below):	48	45	37	10	21	18	17	16	11	6	15	19	16	17	26	1	
Slam.....																	
Spain.....	5	1				3											
Strait Settlements.....	1																
Sudan (Anglo-Egyptian).....																	
Syria (see table below):																	
Turkey (see table below):																	
Union of Socialist Soviet Republics (see table below):																	
Union of South Africa.....																	
Cape Province.....																	
Natal.....																	
Orange Free State.....																	
Transvaal.....																	
Upper Volta.....																	
On vessel:																	
S. S. Taif (pilgrim ship) at Suakin from Jeddah.....			1														

\* Imported case.











**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**  
**YELLOW FEVER—Continued**

[C Indicates cases; D, deaths; P, present]

Place	Week ended—												
	May 31— June 27, 1931	June 28— July 25, 1931	July 26— Aug. 22, 1931	Aug. 23— Sept. 19, 1931	October, 1931				November, 1931				December, 1931
					3	10	17	24	31	7	14	21	28
Gold Coast—Continued.													
Salaga.....													
Tamale.....		2		2				1					1
Wale Wale.....		2		2								2	
Ivory Coast:													
Bobo Dioulasso.....			1										
Grand Bassam.....		1											
Kong Circle.....		1	4	1									
Seguela.....		4	2	1									
Tehini.....			P										
Nigeria.....			1					1		1	1	1	
Senegal:			1										
Podor (Hinterland).....			1										
St. Louis.....			1										
Thies.....			1										
Sudan (French):													
Macina—Kayo Circle.....		4									2	2	
Togo (French): Atakpame—Anie Circle.....										1	1		
Upper Volta:													
Barfara.....		2		2									
Dedougou.....		1		1									
Diabakoko.....									2				
Onsagedougou.....							1						

X





# PUBLIC HEALTH REPORTS

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## STUDIES ON THE BIOCHEMISTRY OF SULPHUR

### XII. PRELIMINARY STUDIES ON AMINO-ACID TOXICITY AND AMINO-ACID BALANCE

By M. X. SULLIVAN, *Senior Biochemist*, W. C. HESS, *Assistant Chemist*, and W. H. SEBRELL, *Passed Assistant Surgeon, United States Public Health Service*

Osborne and Mendel (1915) showed that an adequate diet with casein as the source of protein became inadequate as the casein percentage was lowered from 15-18 per cent to 9 per cent, or slightly less, but could be made adequate for growth by the addition of free cystine provided the protein level was not too low.

In previous work dealing with cystine and cystine amine studies, Sullivan, Hess, and Sebrell (1931), by decreasing the casein content of an adequate diet used by Goldberger and, subsequently, Sebrell, made the basal diet (No. 349) given in Table 1.

TABLE 1.—*Basal diet No. 349*

Ingredients	Quantity
	<i>Grams</i>
Casein, leached.....	4.0
Salt mixture (O. & M.).....	4.0
Cod-liver oil.....	2.0
Cottonseed oil.....	3.0
Brewer's yeast, dried.....	5.0
Cornstarch.....	82.0

Young albino rats placed on this diet when 27-31 days old, and at approximately 55 grams weight, grew subnormally. At the end of 142 days the gain in weight of four rats on this diet was 78, 79, 81, and 83 grams, respectively, with an average of 80.25 grams. The replacement of 0.5 per cent cornstarch by 0.5 per cent cystine in this basal ration made the diet excellent for the growth of the four rats, with gains in weight at the end of 139 days (3 rats) and 140 days (1 rat) of 130, 133, 145, and 155 grams, respectively, or an average gain of 141 grams over the period. At the end of the 139 and 140 days feeding, when the experiment was stopped, the rats on the basal diet plus cystine weighed 186, 189, 200, and 215 grams, respectively, and seemed in excellent condition in every way.

Considerable study has been made on the effect of injecting various amino acids into animals. Though injection experiments are somewhat foreign to dietary studies, they may be referred to briefly.



Blum (1903) found that the intravenous injection of approximately 1.0 gram of cystine per kilo resulted in the death of a dog in a short time. Autopsy revealed severe hemorrhagic nephritis.

Newburgh and Marsh (1925) injected a large number of amino acids intravenously into dogs and rabbits and studied the resulting changes in the kidney. Alanine, leucine, glycine, phenylalanine, and glutamic acid gave no evidence of renal injury in doses as large as 2 grams per kilo of body weight. Arginine and aspartic acid were mildly nephrotoxic, while damage was produced by lysine, histidine, tyrosine, tryptophane, and cystine. The action of cystine was especially pronounced.

Lignac (1926) injected seven mice intramuscularly or subcutaneously, over a period of three weeks, with 1 gram of cystine suspended in water. The animals were then killed. The spleen and liver were gray white, apparently with crystals of cystine. The spleen was enlarged and so was the kidney. Crystals showed in sections of the spleen, liver, and kidney capsule. Histologically the renal cortex showed cloudy swelling.

Injury to rats from small amounts of free cystine in the diet has been reported by other investigators. Lewis (1925) administered cystine orally as the sodium salt in doses of 1.0 to 4.0 grams for three to four consecutive days to two fasting rabbits and to two rabbits on a diet of oats and cabbage. All the animals died. Histologically Warthin found acute passive congestion of the kidney, cloudy swelling of the convoluted tubules, and casts in the collecting tubules. Curtis, Newburgh, and Thomas (1927), in feeding experiments with rats, found that the addition of as little as 0.5 per cent of cystine to their basal diet containing 18 per cent casein produced evidence of renal injury after the diet had been ingested continuously for four or five months. Later Cox, Smythe, and Fishback (1929) found that 0.3 to 0.9 per cent of free cystine in the diet is nephrotoxic to young rats of 60 grams weight or less, but not to rats of 80-90 grams weight. On the other hand, Addis, MacKay, and MacKay (1926-27), in long-continued feeding experiments (330-360 days), found no kidney injury when 1 per cent of free cystine was fed in the diet to rats which at the beginning of the experiment were 30 days old and weighed about 60 grams.

In the diets of Addis, MacKay, and MacKay there was 10 per cent dried yeast (Harris). In our basal diet there was 5 per cent dried yeast. In the feeding experiments where small amounts of free cystine produced kidney injury there were 50 mg. of a yeast vitamin extract. It would seem that high amounts of dried yeast may offset the injurious action of the free cystine on the kidney. This possibility is suggested by Hartwell's (1928) experience in preventing kidney injury, due to edestine, by the use of autoclaved marmite. It is

especially indicated by the findings of Cox and Hudson (1930) that the cystine nephrosis earlier observed by Cox, Smythe, and Fishback can be prevented by the inclusion in the diet of a sufficient amount of Osborne and Wakeman's vitamin B concentrate of yeast. According to Cox and Hudson, the active factor preventing the cystine nephrosis is not identical with any of the known accessory food substances.

Whatever may be the explanation, the fact remains that the young rats on the basal diet No. 349 with 0.5 per cent cystine grew well and were in excellent condition when the feeding was stopped. The experiment suggested a study of the effect of higher levels of cystine and of other available amino acids when added to this basal diet. In carrying out these experiments, results were obtained on the toxicity of a number of amino acids, and evidence was gathered indicating that cystine in suitable amounts offsets to a considerable degree the toxicity of tyrosine. The results, though striking, are merely preliminary to a study of amino-acid toxicity and to amino-acid balance, and are reported as such.

#### EXPERIMENTAL

The basal diet given in Table 1 was used in the experiments presented in this paper. The ingredients of the basal diet were the same as described in paper XI of this series (Sullivan, Hess, and Sebrell, 1931). The cystine was a highly purified sample with a rotation of  $(\alpha)_D^{20} - 213.1$ , determined on a 1 per cent solution in N hydrochloric acid. The tyrosine, tryptophane, glycine, and glutamic acid were high-grade commercial samples. The lysine was a C. P. monohydrochloride made in the laboratory; the glutathione was extracted from yeast by Pirie's (1930) modification of the Hopkins (1929) procedure. The amino acids used replaced a corresponding amount of cornstarch. Experiments were carried out with cystine and other available amino acids at different levels as given under the separate headings.

In every case young male white rats (27-31 days old and weighing 55-60 grams) were selected as the experimental animals. All the rats were from the same stock colony, bred at the National Institute of Health for nutrition studies. All the young rats were from mothers on a standard régime, described in a previous publication (Sullivan, Hess, and Sebrell, 1931). This stock diet gave high fertility with a sturdy and numerous progeny.

#### AMINO ACIDS AT A 20 PER CENT LEVEL

Twenty grams of cystine, tyrosine, tryptophane, and lysine, respectively, replaced 20 grams of cornstarch in the basal diet to make 100 grams of the diet. The cystine-fed rats died in from 3 to 5 days; the tyrosine-fed, in from 5 to 6 days; the tryptophane-fed, in from 9 to

11 days. One of the rats on the 20 per cent lysine diet died on the thirtieth day, and so the other 3 rats on this diet were killed. In all cases there was a rapid loss of weight.

Liver and kidney injury was especially noted in the rats fed cystine. The tyrosine-fed rats gave a striking picture. In general, the legs were swollen and reddened; although able to crawl, the rats dragged the hind legs; the eyes were closed with a dried, reddish-brown secretion, the cornea appeared roughened, and the animals were apparently blind; the intestines contained reddish-black material; the liver was apparently normal, but, in general, the kidney was somewhat mottled. Some evidence of kidney injury was noticeable in the rats fed tryptophane and lysine.

#### AMINO ACIDS AT A 10 PER CENT LEVEL

Ten grams of cystine, tyrosine, glutamic acid, and glycine, respectively, replaced 10 grams of cornstarch in the basal diet to make 100 grams of the diet. Twenty-five grams of reduced glutathione equivalent to 10 grams of cystine replaced 25 grams of cornstarch in the basal diet to make 100 grams of the diet. Cystine and tyrosine were definitely toxic. The 4 rats on cystine died in 2, 3, 4, and 13 days; the 2 rats on tyrosine died in 7 days. The 4 glycine-fed rats lost 6 to 9 grams in weight, and were killed on the fifteenth day. Glutamic acid showed little, if any, toxicity. All the rats gained in weight. On the thirty-ninth day, when they were killed, the rats weighed 92, 94, 107, and 110 grams, respectively, with an average gain of 43 grams. Glutathione, in amounts equivalent to 10 per cent cystine, seemed less toxic than 10 per cent cystine. Only 2 rats were used. One died in strychnine-like convulsions on the ninth day, with no loss in weight, and the other lost 4 grams in weight by the twenty-fourth day, when it was killed. On the other hand, a mixture of the basal diet plus 10 per cent cystine, 6.5 per cent glycine, and 12.5 per cent glutamic acid, all added in the free state in place of cornstarch, was decidedly toxic. Three of the four rats were dead within three days, and the fourth was moribund and was killed on the fourth day. In the case of glycine and glutamic acid, no gross lesions were found. The cystine-fed rats showed liver and kidney injury. The tyrosine caused much less liver and kidney injury than did cystine. On the other hand, in the case of tyrosine feeding there was swelling of the legs and the eyes were closed by a dried, dark secretion. The cystine results verify the conclusion of Curtis and Newburgh (1927) that 10 and 20 per cent free cystine in the diet act like powerful poison to rats, with injury to the kidney and liver.

*Experiments with basal diet plus 10 per cent tyrosine and 5 per cent cystine.*—While the 2 rats on the basal diet plus 10 per cent tyrosine died in 7 days, showing a loss in weight of 18 and 19 grams, respec-

tively, the 4 rats on the basal diet plus 10 per cent tyrosine and 5 per cent cystine lived 10, 10, 13, and 20 days, respectively, with a weight loss varying from 8 to 13 grams, or an average loss of 10.5 grams. This experiment gave some evidence that the addition of cystine counteracts somewhat the killing action of the 10 per cent tyrosine. The clinical symptoms manifested were predominantly those characteristic of tyrosine toxicity—swelling and reddening of the legs,

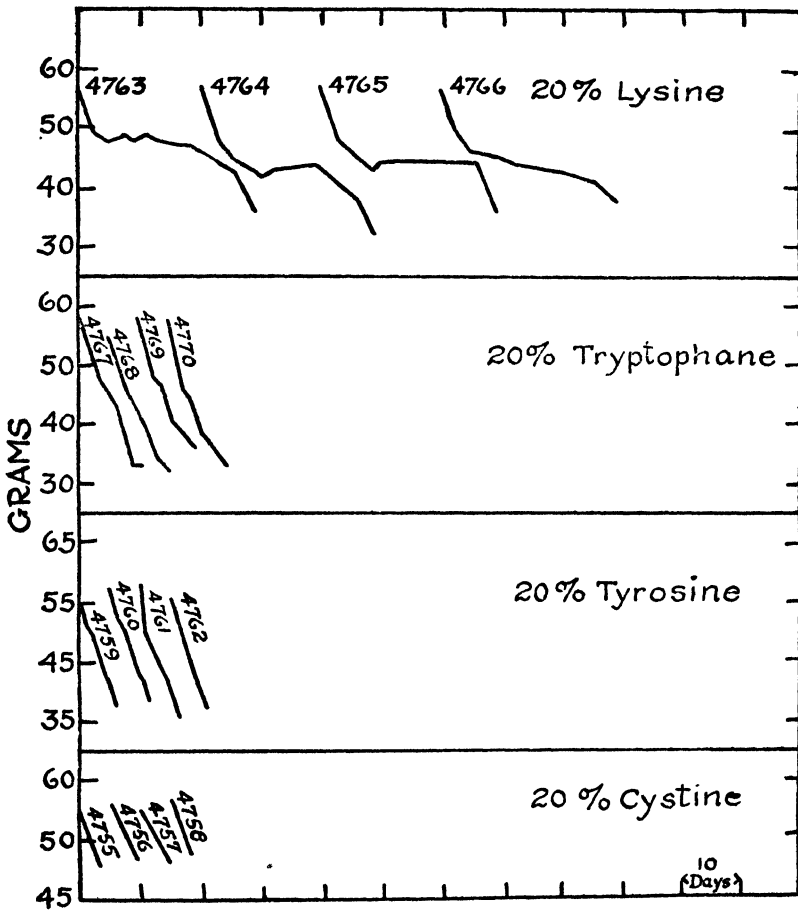


CHART I

reddish-brown secretion about the eyes, and in some cases partial loss of the use of the legs. Some evidence of liver and kidney injury was noted.

#### FIVE PER CENT LEVEL OF AMINO ACIDS

Five grams of cystine and of tyrosine, respectively, replaced 5 grams of cornstarch in the basal diet to make 100 grams of the diet.

**Cystine.**—Four rats, each weighing 56 grams, were placed on the basal diet plus 5 per cent cystine. One died on the thirty-ninth day,

with a weight loss of 10 grams. The other three made gains in weight. On the sixty-seventh day, when they were killed, these three rats weighed 69, 91, and 99 grams, respectively. Four rats on the basal diet unsupplemented weighed, on the sixty-fifth day, 107, 105, 106, and 107 grams, respectively. Histological examination of the organs of the rats fed 5 per cent cystine (made by Passed Asst. Surg.

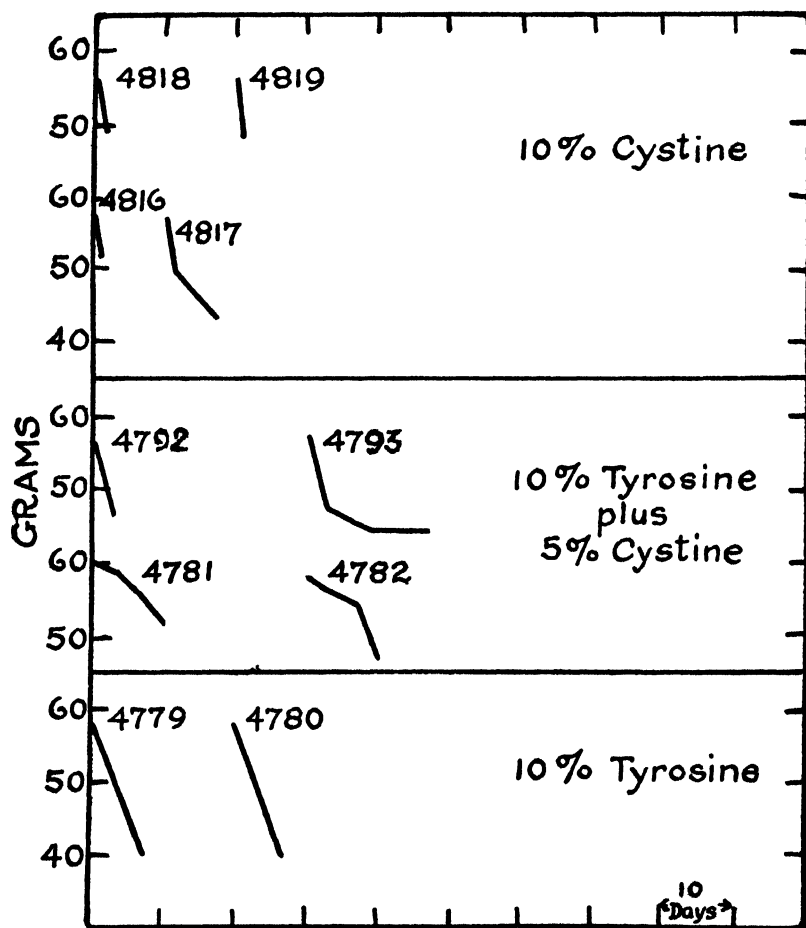


CHART 2

R. D. Lillie) showed more or less fatty degeneration in the liver and parenchymatous degeneration of the kidneys. Since Curtis, Newburg, and Thomas found that 5 per cent cystine added to the diet used by them killed the rats in about two weeks, it is evident that the basal diet plus 5 per cent cystine employed by us is very much less toxic.

*Five per cent tyrosine.*—Tyrosine at the 5 per cent level was decidedly toxic. The two rats used died on the seventh and eighth days,

respectively. The eyelids were closed by a dried, reddish-brown secretion; the legs were more or less reddened and swollen. The liver and kidneys, however, appeared normal.

*Tyrosine plus cystine.*—Four rats were placed on the basal diet with 5 per cent tyrosine and 5 per cent cystine replacing 10 per cent of the cornstarch. Whereas 5 per cent tyrosine killed the rats in 8 days, the

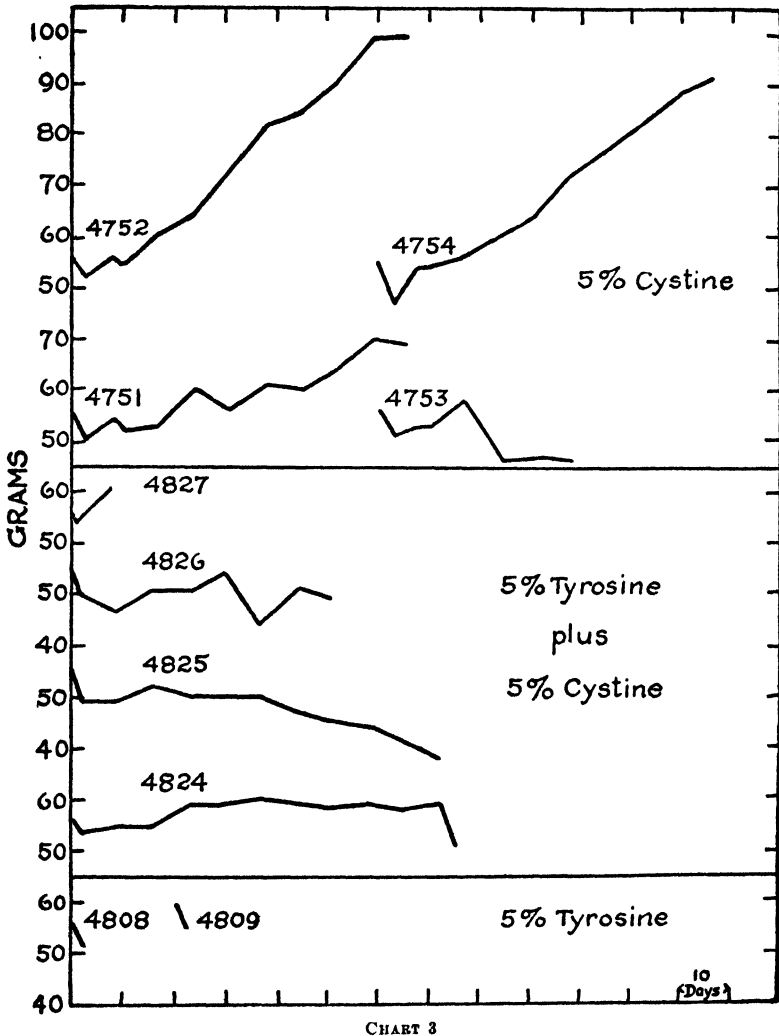


CHART 3

rats on the basal diet plus 5 per cent tyrosine and 5 per cent cystine lived 10, 53, and 72 days, respectively, and the fourth was killed on the seventy-sixth day. It is evident that the presence of the cystine offsets to a considerable degree the toxic action of the tyrosine. Rat No. 4827, which died on the tenth day, with a slight gain in weight, showed at autopsy a mottled and very friable liver. The other rats showed

more or less loss in weight. Rat No. 4824, killed on the seventy-sixth day, gave no external evidence of disease. On autopsy, however, the liver was paler than normal and slightly mottled. The kidneys were large, pale, and granular, with a cortex paler than normal. Rat No. 4825 had a reddish-brown, dried secretion around the eyes, which appeared to be in bad condition. The paws and ears were pale and more or less scaly. Rat No. 4826 had a cataract on the right eye. Both eyes were pale rather than the usual pink color. The liver was paler than normal. The kidneys showed an extremely pale corticomedullary portion, with the outer half of the cortex very dark red.

#### TYROSINE 2.5 PER CENT LEVEL

Tyrosine added to the basal diet to the extent of 2.5 per cent showed little toxicity as judged by gain in weight. When killed after 49 days on the diet the two rats had gained 56 and 69 grams, respectively. Both rats, however, early showed injected blood vessels in the conjunctiva encircling the cornea. The cornea appeared slightly roughened and somewhat opaque. On autopsy, no gross lesions of the liver and kidney were noted.

The results of the feeding experiments are shown in the accompanying charts. The details of the histological examination will be given in a separate paper by Passed Asst. Surg. R. D. Lillie.

#### SUMMARY

At the 20 per cent level all the amino acids tested (cystine, tyrosine, tryptophane, and lysine) were injurious.

At the 10 per cent level, cystine and tyrosine were decidedly toxic, and so was glycine, but to a lesser degree. Glutamic acid showed little toxicity.

At the 5 per cent level, tyrosine was decidedly toxic. Cystine was less toxic.

Glutathione at a 25 per cent level, equivalent to 10 per cent cystine, was less toxic than 10 per cent cystine.

The addition to the basal diet of a mixture of the free amino acids—cystine, glycine, and glutamic acid—in approximately the proportion and amount that they occur combined in 25 parts of glutathione made the diet decidedly toxic.

A diet containing 10 per cent tyrosine and 5 per cent cystine is less toxic than a diet containing 10 per cent tyrosine alone.

A diet containing 5 per cent tyrosine and 5 per cent cystine was much less toxic than a diet containing 5 per cent tyrosine alone. Therefore it would seem that cystine counteracts to a considerable degree the toxic action of tyrosine.

The symptoms of tyrosine toxicity are strikingly different from those of cystine toxicity.

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## HISTOPATHOLOGIC CHANGES PRODUCED IN RATS BY THE ADDITION TO THE DIET OF VARIOUS AMINO ACIDS

(Glycine, lysine, tryptophane, cystine, tyrosine and glutamic acid, and of glutathione, and of mixtures of some of them)

By R. D. LILLIE, *Passed Assistant Surgeon, United States Public Health Service*

In connection with a current study on the toxic effects of various amino acids by Sullivan, Hess, and Sebrell,<sup>1</sup> specimens, chiefly of liver and kidney, from their experimental animals were submitted to the writer for histologic examination. Experimental and gross pathologic data are presented in their report and will be referred to here only in so far as is necessary to correlate the data herewith presented with their presentation.

<sup>1</sup> Pages 75-83 of this issue of Public Health Reports.



As the literature is being reviewed in the report by Sullivan, Hess, and Sebré, it will be unnecessary to cover it in detail in this paper.

#### MATERIAL AND METHODS

Our experimental material consisted of livers and kidneys, and sometimes other organs, from Sullivan, Hess, and Sebré's feeding experiments with amino acids. The tissues were removed as promptly as possible after death, the animals often being killed with carbon monoxide and autopsied immediately. Fixation was done in duplicate in Orth's fluid (2.5 per cent potassium bichromate 10, strong formalin 1) and in 10 per cent formalin (4 per cent formaldehyde gas). The first was used for the preparation of paraffin sections, the second for frozen sections. Paraffin sections were stained routinely with Weigert's acid iron chloride hematoxylin and Van Gieson's picrofuchsin and with Mayer's acid hemalum and eosin. Frozen sections were stained with alum hematoxylin and Sudan IV (saturated in equal parts of acetone and 70 per cent alcohol), with Nile-blue sulphate, and one mounted unstained in glycerin for study with polarized light.

#### CONTROLS

As the experimental diets usually contained only 4 per cent casein, two sets of controls were used—one a stock diet containing 20 per cent casein and the other the basic experimental diet with 4 per cent casein and corn starch taking the place of the amino acids.

On the first diet livers and kidneys of two rats (Nos. 4913 and 4914) were examined.

In No. 4913 the liver cells were generally coarsely granular and scattered hepatic, and Kupffer cells were packed with fine droplets of neutral fat. The renal convoluted tubules generally showed well-preserved basal striation; a few tubules in the deep cortical zone appeared granular and contained basally located fine droplets of neutral fat. The findings in rat No. 4914 were essentially identical.

On the low protein high starch basic diet the four rats, Nos. 4669, 4670, 4671, and 4672, showed practically identical findings, which are illustrated by the protocol of rat No. 4670 (killed) (Path. No. 843):

*Liver.*—With Sudan IV there is an irregular infiltration of the liver cells with coarse red globules and finer poorly stained droplets largely about the centers of the lobules, with fine droplets also in the Kupffer cells in these and other parts of the lobules. All of this fat stains blue with Nile-blue sulphate. A few doubly refracting crystals and irregular masses are scattered among them. The marginal liver cells show some increased granularity, oxyphilia, and nuclear pyknosis.

*Kidney.*—A few of the deep group of convoluted tubules show cell swelling and granularity. Most of the convoluted tubular epithelium is not thickened and plainly striated basally. A small amount of foamy coagulum is present in some tubules. No fatty changes are apparent in frozen sections stained by Sudan IV or Nile blue or in unstained sections under crossed Nicol prisms.

Here, too, the kidneys are essentially the same as in the control diet, but the livers show a moderate centrolobular fatty acid and lipid infiltration. This would appear to be attributable to the high carbohydrate content of the diet, and was associated with a failure to grow normally.

#### GLYCINE

A single series of four rats on 10 per cent glycine (rats Nos. 4885, 4886, 4887, 4888) may best be illustrated by the protocol of rat No. 4887 (Path. No. 918):

*Liver*.—No focal necroses, cells often coarsely granular and contain diffusely moderate numbers of fine fat droplets stained deep red by Sudan IV, usually unstained by Nile-blue sulphate and nearly all singly refracting.

*Kidney*.—Essentially normal.

The hepatic fat appeared to be more plentiful in the centers of the lobules in No. 4886, in their peripheries in No. 4885, and irregularly in No. 4888. Basal fat droplets were seen in a few of the deep convoluted renal tubules in Nos. 4886 and 4888.

Hepatic fat deposition appears to be increased over that in the control groups.

#### LYSINE

The group of four rats (4763, 4764, 4765, 4766) on 20 per cent lysine may be illustrated by the protocol of rat No. 4766 (Path. No. 822):

*Liver*.—Shows diffuse fatty degeneration of the liver cells except those bordering directly on the hepatic venules. The droplets are fine to medium in size, stain red with Sudan IV, a few pink and violet, but most deep blue with Nile-blue sulphate and are singly refracting. In paraffin sections the cytoplasm between the much fewer coarser vacuoles is finely to rather coarsely granular, the finest sudan and Nile-blue staining droplets not being dissolved out by the acetone-benzol process of embedding. There is no hemorrhage or necrosis.

*Kidney*.—Shows swelling and opacity of the cytoplasm of the convoluted tubules generally. The opaque cytoplasm is generally very finely granular and presents numerous clear vacuoles next the basement membrane in the paraffin sections. These vacuoles are generally filled with fat droplets staining red with Sudan IV and often pink or violet, less often blue with Nile-blue sulphate. Only scattered minute doubly refracting droplets are seen. These are not numerous in the superficial zone of the cortex, and are definitely more plentiful in the untreated, unstained section than in that stained with Nile blue and differentiated in very dilute acetic acid.

The kidneys in the other three were essentially similar. The liver in No. 4765 showed only patchy hydropic, but no fatty vacuolation, and the livers of Nos. 4763 and 4764 showed no lesions and no fat.

These renal changes may be characterized as an acute nephrosis, and are probably comparable to the granular degeneration of the cortical tubules observed by Newburgh and Marsh (1925) in the dog after intravenous administration of lysine.

## TRYPTOPHANE

The three rats maintained on 20 per cent tryptophane showed essentially similar findings, as illustrated by the protocol of rat No. 4769 (Path. No. 798):

*Kidney*.—The epithelium of the proximal convoluted tubules is swollen, granular, and sometimes frayed. The distal group show compact, hyaline, or granular epithelial cytoplasm, small compact globular oxyphil bodies in their lumina, or hyaline casts in others.

*Liver*.—No focal lesions and no evidence of fatty infiltration or degeneration in paraffin sections.

Unfortunately no material for frozen sections was preserved in this group. The changes constitute a mild nephrosis, probably comparable in grade to that in Newburgh and Marsh's dog which received 1 gram per kilogram intravenously.

## CYSTINE

Cystine was fed in 5, 10, and 20 per cent levels and produced a series of pathologic changes, which became progressively more acute and severe with the increasing proportion of the amino acid in the diet. As the findings in the individual rats were essentially similar for each level, the changes may be best presented by a selected individual protocol from each group.

*5 per cent cystine*.—Rats Nos. 4751, 4752, 4754, illustrated by protocol No. 833, rat No. 4754

*Liver*.—Many small nodules of closely packed lymphocytes and probably fibroblasts, sometimes with a few polymorphonuclears, averaging about 50 micra in diameter. Liver cells adjoining the portal area often show denser, sometimes finely vacuolated cytoplasm and slightly shrunken, hyperchromatic nuclei. Numerous liver cells in the intermediate zone are distended by coarse globules of fat, while most of the remainder of the liver cells contain greater or less numbers of fine fat droplets. In the central portions of the section the coarse globules stain pink with Nile blue; marginally they are dark blue. In and adjoining the portal areas are cells filled with globules stained faintly by Sudan IV and dark blue green by Nile blue. No lipids are seen with polarized light.

*Kidney*.—The epithelial cytoplasm of the convoluted tubules is finely to coarsely granular, sometimes retaining brush borders, sometimes apparently continuous with somewhat more oxyphil intratubular hyaline exudate. The latter is often more deeply stained and forms compact casts, more often in the deeper cortex. These casts glow distinctly with crossed Nicol prisms. Rare lipid droplets are seen in the epithelium of the convoluted tubules, and only an occasional cortical (collecting) tubule contains fine sudan staining fat droplets. In the pyramidal tubules numerous fine fat droplets are seen in the basal half of the epithelial cells. These stain red with Sudan IV, deep blue with Nile-blue sulphate for the most part, and a few not staining with Nile blue are doubly refracting. The last are less in number in the acetone alcohol Sudan IV preparation than in the aqueous Nile-blue stain. The glowing of the casts under crossed Nicol prisms is absent in the preparation stained by the acetone-70 per cent alcohol solution of sudan.

**10 per cent cystine.**—Rats Nos. 4816, 4817, 4818, 4819, illustrated by protocol No. 876, rat No. 4819

**Kidney.**—Many of convoluted tubules appear cloudy and swollen; basal striation is often retained; many contain numerous small basally located fat droplets (neutral fat). Some of the coarse straight tubules contain many extremely small doubly refracting lipid crystals.

**Liver.**—Narrow zones of congestion and coagulation necrosis of liver cells about portal areas. Liver cells here strongly oxyphil, with pyknotic or partially or completely karyolytic nuclei. Or there may be hemorrhagic necrosis with disappearance of cells. The liver cells elsewhere contain many small vacuoles containing chiefly neutral fat. Intense fatty degeneration is seen in the periportal zones. Only rare lipid crystals are seen outside the necrotic zones with polarized light. Areas are also seen where the liver cells are about normal.

Rat No. 4817 showed no periportal necroses and relatively slight parenchymatous and no fatty degeneration in the kidney. Renal changes were also less marked in rat No. 4818, but the periportal necroses were partly hemorrhagic in this rat.

**20 per cent cystine.**—Rats Nos. 4755, 4756, 4757, 4758, illustrated by protocol No. 766, rat No. 4758

**Liver.**—Extensive periportal coagulation necroses of liver cells, with more or less hemorrhage, in places completely replaced and disrupted by hemorrhage, and more or less diffuse patchy medium and fine vacuolation of the liver cells. The vacuoles are filled with fat stained red by Sudan IV and deep blue by Nile blue, the distribution of it being more in the necrotic and necrobiotic areas. Among the fat globules are a few doubly refracting globules, some stained pink by Sudan IV, others unstained by either Nile blue or sudan.

**Kidney.**—The cytoplasm of the convoluted tubular epithelium is oxyphil, opaque in appearance, often vacuolated, with opaque rounded oxyphil masses next and in the lumen; often there is more or less pyknosis and sometimes complete karyolysis. Only a few groups of tubules show basally located fine fat droplets stained red by Sudan IV. None stained by Nile blue are found, nor are any doubly refractive globules seen.

The periportal necroses were purely coagulative in rat No. 4756; the findings in this and the other two rats were otherwise essentially similar.

The periportal necroses first described by Curtis and Newburgh (1927 (2)) were found in our material, as in theirs, on 10 and 20 per cent levels of cystine feeding, but in our material did not appear on lower levels. It would appear that the hepatic fatty changes were a manifestation of less severe injury and that they usually precede the necroses. Renal injury, though of similar character, appears to have been less pronounced in our material than in that of Curtis and Newburgh (1927 (1)) or Cox, Smythe, and Fishback (1929).

#### TYROSINE

Tyrosine was fed in levels of 2.5, 5, 10, and 20 per cent. On the lowest level fatty changes in the liver, similar to those seen on the

basic diet, appeared, while on higher levels the liver showed no lesions; the kidneys, only minor grades of parenchymatous degeneration in any level. An interesting finding is the diffuse glowing under polarized light of the contents of the coarse cortical straight tubules in rats on the 20 per cent level. This appearance seems to be peculiar to tyrosine-fed rats.

The more important findings in tyrosine intoxication are an exudative blepharitis and edema of the extremities. Only a few tissues from the ocular region were successfully sectioned and studied, and no histologic material from the edematous extremities or other viscera, lesions of which might explain such edema, was studied.

*Protocol No. 771; rat No. 4759; 20 per cent level*

*Liver.*—No lesions; no fat by Sudan IV or Nile blue. Lipoids are seen in the capillaries with polarized light.

*Kidney.*—Convoluting tubules often show basal striation, or are swollen and finely granular or dilated and contain foamy oxyphil material. No fat is seen by Sudan IV or Nile blue. Minute doubly refractile crystals are seen in the blood in the veins. The contents of some of the coarse straight tubules glow diffusely with crossed Nicol prism. This appearance is not seen in the cortical convoluting tubules or in the pyramids.

*Small intestine.*—The epithelium of the villi is elevated off the stroma by a row of coarse vacuoles with narrow oxyphil strands between them.

*Spleen.*—The follicles are small, the trabeculae are prominent, thin and fibrous, the pulp is anemic, contains some lymphocytes, and there is possibly some swelling of the sinus endothelium.

*Eyelid.*—In part of the section the epidermis shows three to five layers of prickle cells, a layer of eleidin cells, and several layers of keratinized squames. Fairly abruptly this area grades into one showing about one to two layers of prickle cells, an incomplete eleidin layer. Near the margin, both layers of the thin prickle-cell layer often show intranuclear, sometimes perinucleolar, vacuoles, sometimes a large clear area bounded by a dense chromatic nuclear membrane, some crescentic perinuclear clefts and cytoplasmic vacuoles. In the derma there is some apparent rarefaction (technical?) and some pericapillary lymphocyte infiltration. Hyperemia is not apparent. On the other side of the thick epidermal area (inner surface of lid) is an area of pyogenic ulceration in which the epidermis is replaced by a crust of squames and fibrin and leucocytes, the collagenous lamellae of the derma are apparently intact, the derma is edematous, containing numbers of leucocytes and lymphocytes and next the surface a narrow zone of fragmented (leucocyte?) nuclei.

*Muscle.*—Some areas of fragmentation, some of waxy degeneration. A small nerve appears intact.

In rats Nos. 4760 and 4762 there was breaking down of the center of the crystalline lens to amorphous oxyphil debris. Rat No. 4760 showed lymphocyte infiltration of the iris and ciliary body, and slight polymorphonuclear infiltration of the cornea.

## CYSTINE AND TYROSINE

As longer survival of rats fed on mixtures of cystine and tyrosine was noted than on tyrosine alone, the histologic findings appear to be of considerable interest.

Of three rats fed on 5 per cent each of cystine and tyrosine, two were killed and showed moderately severe renal degenerative changes, advancing to necrosis in areas in rat No. 4824, but no hepatic lesions.

*Protocol No. 953; rat No. 4826*

*Eye.*—Cornea shows no lesions; retina appears normal; iris and ciliary small.

*Spleen.*—Perifollicular reticulum cell hyperplasia; pulp relatively anemic.

*Kidney.*—Epithelium of convoluted tubules generally swollen and finely granular; numerous large hyaline casts in collecting tubules in cortico-medullary zone; hyaline and few granular casts in pyramidal tubules. Rather marked patchy cortical congestion; no fatty changes.

*Liver.*—No evident lesions in paraffin sections and only occasional liver cells contain many fine fat droplets.

Similarly, one rat receiving 5 per cent cystine and 10 per cent tyrosine showed no hepatic lesions and in this instance practically no renal changes.

Rat No. 4827, receiving 5 per cent cystine and 5 per cent tyrosine, and rats Nos. 4781 and 4792 (5 per cent cystine and 10 per cent tyrosine) died and showed the typical periportal necroses of cystine poisoning in the liver, but fatty changes were absent in the two rats receiving 10 per cent tyrosine. However, rat No. 4827 (5 per cent tyrosine) showed diffuse fatty degeneration in the liver as well. Rat No. 4782 (5 per cent cystine and 10 per cent tyrosine, killed) showed some periportal cell oxyphilia and fatty degeneration but no actual necrosis.

*Protocol No. 849; rat No. 4792 (dead 5 minutes)*

*Liver.*—In a narrow zone about each portal area the liver cells are converted into finely vacuolated, hyaline, opaque, strongly oxyphil masses without nuclei, or marginally with nuclear pyknosis. Blood-filled capillaries with well-stained endothelial nuclei pass through these zones. Elsewhere there are scattered swollen clear liver cells containing coarse oxyphil granules and shrunken densely pyknotic nuclei. An earlier stage of this last process may be represented by rather large cells with poorly stained finely reticular cytoplasm and apparently normal nuclei. No fatty changes are seen, using Sudan IV, Nile-blue, and polarized light.

*Kidney.*—The proximal convoluted tubules are swollen and finely granular, the distal slightly swollen, and plainly striated basally. In the proximal group the free margin of the cells seems to be breaking down to granular detritus within the lumen. There is no evident fatty degeneration with Sudan IV, Nile-blue, or polarized light.

*Muscle.*—Partial hyalinization of some fibers; apparent multiplication of nuclei; no fatty degeneration.

*Small intestine.*—Reddish-brown amorphous material in dense masses and granules in lumen. Mucosa intact except for slight brownish discoloration of epithelium of tips of villi.

*Eye.*—Corneal epithelium shows large rounded irregular surface cells making an uneven surface. The outer layers show the normally poor nuclear staining, but the cells lack the normal flattening and degree of oxyphilia, appearing edematous and containing round, oxyphil nuclei rather than flattened ones.

No especial abnormality of uvea or iris noted.

The presence of corneal changes is of interest, especially as evidence of ocular lesions was absent in the 5 per cent tyrosine-5 per cent cystine combination (rat No. 4826 above).

Comparison of these animals with those receiving tyrosine or cystine alone appears to confirm the clinical impression of an antagonism between the two amino acids in so far as regards their toxic effects.

#### GLUTAMIC ACID

Glutamic acid fed at 10 per cent level produced at most slightly greater renal and hepatic changes than the basal 4 per cent casein diet. Rats Nos. 4820, 4821, and 4823 showed findings essentially similar to those in rat No. 4822, whose protocol is cited below.

##### *Protocol No. 936; rat No. 4823*

*Spleen.*—Pulp anemic with moderate number of lymphocytes and few megakaryocytes; follicle of moderate size, with some perifollicular reticulum cell hyperplasia.

*Liver.*—Liver cells finely to coarsely vacuolated near centers of lobules, the vacuoles containing solid or centrally clear ring-shaped fat globules which stain intensely red with Sudan IV, often deep blue with Nile-blue sulphate, and are usually singly refracting. No focal necroses.

*Kidney.*—The convoluted tubular epithelium is cloudy, indistinctly striated or finely granular, the rod borders sometimes swollen and hyaline, and usually without appreciable fatty changes. The tubules often contain foamy coagula, small globules of hyaline, or hyaline casts.

#### GLUTAMIC ACID, CYSTINE, AND GLYCINE

These amino acids were mixed in approximately the proportion in which they occur in glutathione and fed to a series of four rats (Nos. 4873, 4874, 4875, and 4876). The diet contained 10 per cent cystine, 6.5 per cent glycine, and 12.5 per cent glutamic acid.

With this combination the same periportal hemorrhagic and coagulative necroses as seen in cystine poisoning appear in the liver, but the fatty changes of pure cystine poisoning in the liver are largely suppressed. There is only moderate parenchymatous and slight or no fatty degeneration in the kidney.

The protocol of rat No. 4875 (901) may be considered as illustrative:

*Spleen.*—Pulp contains rather numerous lymphocytes and megakaryocytes.

*Kidney.*—Epithelium of convoluted tubules in part swollen and granular, with sometimes serous exudate in lumen, and deposition of fine droplets of fat

in the basal part of the epithelial cells in some tubules. Basal striation is retained best in the subcapsular tubules. No fatty acids or lipoids are seen.

*Liver*.—Areas of periportal coagulative and hemorrhagic necrosis, incompletely surrounding the portal tissues, or not involving some of periportal zones, and scattered areas of fine droplet fatty degeneration of liver cells often adjoining areas of necrosis or entering areas of hemorrhage.

Fatty acids and doubly refracting material appear to be absent.

Rat No. 4874 differed from the other three in that the periportal necroses were purely coagulative in type.

#### GLUTATHIONE

Two rats (Nos. 4806 and 4807) were fed on 25 per cent glutathione, with the production of hepatic changes strongly resembling those of cystine poisoning. Periportal necroses were present only in one, this rat also showing quite severe renal degenerative changes.

The protocols of both rats are cited.

##### *Protocol No. 869; rat No. 4806 (died, immediate autopsy)*

*Thymus*.—No evident abnormality. Juvenile type.

*Kidney*.—Epithelium of convoluted tubules swollen, usually granular, lumina almost occluded, collecting tubules normal. Occasional granular cast. Many of the swollen convoluted tubules show fine fat droplets basally (red by Sudan IV, singly refracting in acetone alcohol sudan preparations, unstained by Nile blue), and in some groups of tubules numerous doubly refracting crystals, but none in most areas.

*Liver*.—Definite zones comprising about one-third of the lobules about the portal areas show congestion and coagulation necrosis of the hepatic cells, the form of the strongly oxyphil completely karyolyzed cells being preserved and well-stained endothelial cell nuclei persisting between them. The balance of the lobule shows fine to medium sized vacuoles in the liver cells which contain fat staining solidly with Sudan IV or in the form of a ring or crescent about a central unstained globule; in similar form and dark blue with Nile-blue sulphate and nearly all singly refracting.

*Spleen*.—Moderate congestion of pulp, moderate perifollicular reticulum cell hyperplasia.

##### *Protocol No. 886; rat No. 4807*

*Spleen*.—Marked swelling and hypertrophy of follicles, without lymphoblastic centers for most part, compressed, relatively atrophic pulp, with trabecular fibrosis.

*Kidney*.—Slight foamy serous exudate within cortical tubules, basal striation usually retained, occasional convoluted tubule shows swollen finely granular area toward lumen. No appreciable fatty changes.

*Liver*.—Marked fatty degeneration, with large fat droplets, which often appears as rings of fat deep red by Sudan IV about a central pale or clear area. The fat is deposited in liver cells, largely in the intermediate zone, sometimes reaching the hepatic venules. Scattered lipid crystals are seen among the fat droplets. The fat stains blue by Nile-blue sulphate. Some of the cells abutting on portal areas show increased oxyphilia but no definite necrosis.



## SUMMARY

1. The basic diet containing only 4 per cent casein as the main source of protein produces a moderate centrilobular fatty degeneration in the liver.

2. The addition of 10 per cent glycine to the basic diet produces an increase in hepatic fat deposition.

3. The addition of 20 per cent lysine to the basic diet produces a parenchymatous and fatty degeneration of the renal convoluted tubules and a diffuse fatty degeneration of the liver without necrosis.

4. The addition of 20 per cent tryptophane to the basic diet produces a moderate parenchymatous degeneration of the renal tubules.

5. The addition of cystine to the basic diet in levels of 5 to 20 per cent produces parenchymatous and fatty degeneration of the renal convoluted tubules of increasing grade, and a more or less diffuse fatty degeneration of the liver, with, in levels of 10 and 20 per cent, areas of periportal coagulative and hemorrhagic necrosis.

6. The addition of tyrosine to the basic diet in levels of 2.5 to 20 per cent produced reddening and edema of the extremities, an exudative blepharitis, central degeneration of the crystalline lens, and a minor grade of parenchymatous degeneration of the kidney. The hepatic fatty changes seen when the basic diet alone is fed were present in low levels and absent in high levels of tyrosine feeding.

7. When 5 per cent cystine and 5 or 10 per cent tyrosine were fed simultaneously, those rats which died in the course of the experiment showed the periportal necroses of cystine poisoning. In these the fatty changes of cystine poisoning were absent with the higher level of tyrosine. The animals which were killed showed renal degenerative changes on the lower tyrosine level, but not on the higher, and no hepatic lesions except in one animal which showed incipient periportal necrosis and fatty degeneration. Ocular changes were not manifest on the lower tyrosine level, but present on the higher. There appears also histologically to be an antagonism between these two amino acids.

8. The addition of 10 per cent glutamic acid to the basic diet produced little or no significant change as compared with the basic diet alone.

9. When 10 per cent cystine, 6.5 per cent glycine, and 12.5 per cent glutamic acid (approximately the proportions in glutathione) were fed together the periportal necroses of cystine poisoning appear, but the hepatic fatty changes are largely suppressed, and the renal degenerative changes are decreased.

10. Two rats fed 25 per cent glutathione showed hepatic fatty changes, and in one periportal necroses and severe renal degeneration were noted.

## REFERENCES

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## COURT DECISION RELATING TO PUBLIC HEALTH

*Law for licensing of milk dealers construed; licensing regulation of city board of health held invalid.*—(New Hampshire Supreme Court; *Whitney v. Watson et al.*, Board of Health, 157 A. 78; decided Nov. 3, 1931.) Section 4 of Chapter 163, Public Laws, provided as follows:

The boards of health of cities and the selectmen of towns may grant to any person who applies therefor and pays the sum of \$2 a license to sell milk, skim milk, and cream within their city or town, until June 1 next following, and may renew such license annually in the month of May upon application and the payment of a like fee: *Provided*, That said applicant will satisfy the board of health or selectmen that he understands the care and handling of said product, and files the name and address of all his producers, and gives reasonable assurance that the cows from which the milk is taken are healthy and properly fed and cared for. Any person selling only the product of his own cows shall be exempt from paying any fee for such license.

In connection with the issuance of licenses to sell milk in the city of Manchester, the board of health of said city on March 26, 1928, voted as follows:

That no more distributors' licenses to sell milk in Manchester be granted to nonresidents of Manchester; \* \* \* This vote is not to affect licenses in force at this date.

The plaintiff, who owned and operated a milk farm in Bedford, 6 miles from Manchester, desired to sell his product direct to consumers in Manchester, and on July 3, 1931, applied for a license under the above statute. He filed his name and address, satisfied the city board of health that he understood the care and handling of his product, and gave them reasonable assurance that the cows were healthy and properly fed and cared for, but the board refused to grant him a license because his plant was outside of Manchester and because he did not hold a license on March 26, 1928. The plaintiff then sought by mandamus to compel the issuance of a license to him. It appeared that the board had granted licenses after March 26, 1928, to other nonresidents whose plants were farther removed from the

city than was plaintiff's plant, but that such cases were renewals of licenses held on March 26, 1928. The trial court decided that the plaintiff was entitled to a license and the defendants carried the case to the supreme court.

One of the defendants' contentions was that the conditions laid down by the statute as prerequisite to the granting of a license, being preceded by "may" instead of "shall", were merely minimum requirements to which others could be added by the board in its discretion. But the supreme court held that this contention could not be maintained, as an unguided and unrestrained discretion in the board would make the act unconstitutional. The court stated that the legislature had seen fit to specify definite conditions controlling the board's action and that, the requirements having been fixed by the legislature, the board's function was limited to determining whether an applicant complied therewith. "It is a familiar rule of statutory construction," said the court, "that the word 'may' shall be construed to mean 'shall' when such appears to be the intention of the legislature. \* \* \* It was the intention of the legislature to make the issue of licenses mandatory when the conditions have been complied with."

Regarding the requirement of the statute that the applicant give the board "reasonable assurance that the cows from which the milk is taken are healthy and are properly fed and cared for," the court said that this "necessarily means an assurance not only as respects conditions at the instant of the grant but as to their probable continuance during the term of the license." It was declared to be obvious that, if the assurance mentioned in the statute could not be had without a view and physical examination of an applicant's plant, some limitation of the area in which they were to be had and conducted must have been contemplated, but, the search being for the line limiting the area of practical administration, the city boundary considered alone, was stated by the court to have no significance.

Distance, moreover, may not be the test. Topographical transportation and other conditions may figure in the problem. What are the reasonable limits under all the conditions is a question for the board, subject to revision by the court if not fixed by the exercise of a reasonable discretion.

The court declared the board's rule adopted on March 26, 1928, to be invalid, saying:

As a [the] rule, however, by its terms as well as by practical construction, authorizes the issue of licenses to some nonresidents, it can not be construed as a finding that the bounds of Manchester limit the field of practical administration. As the rule can be sustained on no other basis, its invalidity follows.

Moreover, the rule is invalid, as respects the plaintiff, because it limits the issue of nonresident licenses to such applicants as already held them. While knowledge of an applicant and of his products, gained by observation of the conduct of his business under past licenses, may be valuable evidence bearing on his fitness and

that of his herd, it is clear that mere priority in the field affords no conclusive test of such qualifications. The limitation is an arbitrary discrimination. It accords different treatment to persons similarly situated. A statutory rule to the same effect would have been in conflict with both the State and Federal Constitutions. \* \* \*

The court held that the plaintiff was entitled to a license.

## DEATHS DURING WEEK ENDED DECEMBER 19, 1931

*Summary of information received by telegraph from industrial insurance companies for the week ended December 19, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Dec 19, 1931	Corresponding week, 1930
Policies in force.....	74, 393, 230	74, 932, 777
Number of death claims.....	13, 691	13, 608
Death claims per 1,000 policies in force, annual rate.....	9. 6	9. 5
Death claims per 1,000 policies, first 51 weeks of year, annual rate.....	9. 6	9. 6

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 19, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Dec. 19, 1931				Corresponding week, 1930		Death rate <sup>2</sup> for the first 51 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1931	1930
Total (82 cities).....	7, 926	11. 6	585	46	11. 9	653	11. 8	11. 9
Akron.....	35	6. 9	8	79	9. 6	2	7. 5	7. 8
Albany.....	43	17. 4	3	60	12. 2	0	14. 1	14. 7
Atlanta.....	78	14. 7	10	98	16. 3	8	14. 9	15. 3
White.....	38	10. 7	5	75	14. 4	5	11. 5	11. 4
Colored.....	40	22. 4	5	144	20. 1	3	21. 6	23. 0
Baltimore.....	239	15. 3	22	77	12. 2	13	14. 2	13. 9
White.....	178	13. 9	20	89	11. 8	12	12. 9	12. 7
Colored.....	61	21. 7	2	32	13. 8	1	19. 9	19. 7
Birmingham.....	59	11. 4	10	100	12. 2	7	13. 0	13. 5
White.....	32	10. 0	7	119	8. 4	3	10. 0	10. 0
Colored.....	27	13. 7	3	73	18. 3	4	17. 9	19. 2
Boston.....	190	13. 2	14	40	12. 9	21	14. 1	14. 0
Bridgeport.....	32	11. 3	3	50	12. 1	1	11. 1	10. 9
Buffalo.....	121	10. 9	4	18	12. 8	8	12. 8	12. 9
Cambridge.....	26	11. 9	2	41	13. 8	3	12. 0	11. 8
Camden.....	32	14. 0	4	69	9. 7	1	14. 2	13. 3
Canton.....	18	8. 8	0	0	9. 9	1	9. 9	9. 8
Chicago.....	638	9. 6	45	40	9. 9	32	10. 4	10. 4
Cincinnati.....	124	14. 1	6	36	15. 2	9	15. 7	15. 5
Cleveland.....	187	10. 7	17	50	9. 2	15	11. 0	11. 0
Columbus.....	75	13. 2	3	29	13. 6	9	13. 4	13. 3

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 19, 1931, etc.—Continued*

City	Week ended Dec. 19, 1931				Corresponding week, 1930		Death rate <sup>2</sup> for the first 51 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1931	1930
Dallas <sup>4</sup> .....	57	10.9	9	-----	11.5	4	11.1	11.4
White.....	38	8.8	4	-----	11.0	3	9.8	10.5
Colored.....	19	20.9	5	-----	13.8	1	17.3	16.1
Dayton.....	50	11.3	1	14	10.8	1	10.5	9.6
Denver.....	76	13.6	7	70	17.0	14	13.8	14.9
Des Moines.....	29	10.5	4	70	10.6	0	11.0	11.6
Detroit.....	249	7.9	18	28	8.6	45	8.1	9.2
Duluth.....	22	11.3	1	27	11.8	1	11.2	11.5
El Paso.....	27	13.4	2	-----	17.7	3	15.0	17.0
Erie.....	25	11.1	1	21	11.7	5	10.4	11.0
Fall River <sup>17</sup> .....	24	10.9	1	24	13.1	1	11.1	11.6
Flint.....	24	7.6	2	25	6.6	1	6.8	8.9
Fort Worth <sup>4</sup> .....	33	10.3	3	-----	17.5	5	10.5	11.0
White.....	27	10.0	2	-----	17.8	5	10.1	10.4
Colored.....	6	11.5	1	-----	15.8	0	12.3	13.9
Grand Rapids.....	34	10.3	1	15	8.6	1	9.0	10.1
Houston <sup>4</sup> .....	78	13.1	4	-----	10.2	12	11.0	13.1
White.....	56	12.9	4	-----	10.3	11	10.2	10.8
Colored.....	22	13.8	0	-----	10.0	1	13.4	15.9
Indianapolis <sup>4</sup> .....	102	14.4	8	61	12.1	2	13.6	14.3
White.....	82	13.2	7	61	11.7	2	13.1	13.4
Colored.....	20	23.1	1	61	15.3	0	17.1	21.1
Jersey City.....	67	11.0	4	35	11.3	10	11.2	11.3
Kansas City, Kans. <sup>4</sup> .....	32	13.6	3	66	16.7	7	12.6	11.8
White.....	24	12.6	3	80	17.9	5	11.9	11.1
Colored.....	8	17.8	0	0	11.4	2	15.5	14.7
Kansas City, Mo.....	79	10.1	4	32	12.5	3	12.8	13.2
Knoxville <sup>4</sup> .....	28	13.4	2	43	8.8	0	12.6	13.4
White.....	19	10.8	1	24	7.6	0	11.8	12.4
Colored.....	9	26.4	1	194	15.1	0	16.7	18.4
Long Beach.....	36	12.3	2	50	10.2	2	9.9	10.1
Los Angeles.....	321	12.7	19	55	12.7	34	10.7	11.0
Louisville <sup>4</sup> .....	73	12.3	6	55	16.3	4	13.7	13.5
White.....	53	10.6	4	42	13.6	1	12.3	12.0
Colored.....	20	21.9	2	143	30.7	3	21.2	21.7
Lowell <sup>7</sup> .....	40	20.8	7	183	7.3	2	13.0	13.2
Lynn.....	19	9.6	2	58	11.7	1	9.4	10.5
Memphis <sup>4</sup> .....	65	13.1	6	64	18.5	7	16.4	16.8
White.....	33	10.8	2	34	13.6	0	13.3	13.2
Colored.....	32	16.9	4	116	26.4	7	21.3	22.8
Miami <sup>4</sup> .....	22	10.2	0	0	15.0	4	11.6	11.1
White.....	17	10.2	0	0	14.6	1	10.7	9.8
Colored.....	5	10.3	0	0	16.6	3	14.4	15.4
Milwaukee.....	91	8.0	9	40	10.7	25	9.1	9.7
Minneapolis.....	96	10.6	7	45	10.6	11	10.9	10.7
Nashville <sup>4</sup> .....	38	12.7	5	75	15.6	2	16.7	16.4
White.....	30	13.9	4	79	11.2	2	14.4	13.8
Colored.....	8	9.7	1	63	26.7	0	22.7	23.2
New Bedford <sup>7</sup> .....	29	13.4	2	52	13.0	3	12.1	11.0
New Haven.....	53	17.0	7	103	11.5	1	12.6	12.5
New Orleans <sup>4</sup> .....	148	16.5	13	73	16.9	14	16.5	17.8
White.....	91	14.3	9	70	15.7	8	13.5	14.3
Colored.....	57	22.1	4	66	19.8	6	24.0	24.8
New York.....	1,406	10.3	92	39	10.9	113	11.0	10.7
Bronx Borough.....	184	7.2	11	31	8.1	8	8.1	7.8
Brooklyn Borough.....	590	9.9	37	39	9.9	57	10.1	9.8
Manhattan Borough.....	547	15.7	29	39	15.9	37	16.5	16.9
Queens Borough.....	134	6.1	12	48	7.2	8	7.1	7.0
Richmond Borough.....	41	13.1	3	57	14.4	3	13.4	13.8
Newark, N. J.....	94	11.0	9	48	10.9	6	11.4	11.9
Oakland.....	84	15.0	2	25	11.7	3	10.8	11.0
Oklahoma City.....	39	10.3	1	14	13.6	2	10.6	10.9
Omaha.....	53	12.8	7	81	10.7	3	13.8	13.5
Paterson.....	27	10.1	3	51	16.9	5	13.1	12.1
Peoria.....	18	8.7	1	26	12.8	7	12.3	12.3
Philadelphia.....	534	14.2	33	48	12.6	35	12.9	12.6
Pittsburgh.....	169	12.3	21	73	13.4	22	14.2	13.8
Portland, Oreg.....	80	13.6	0	0	12.9	3	11.7	12.1
Providence.....	50	10.2	3	27	15.6	10	12.6	12.8

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 19, 1931, etc.—Continued*

City	Week ended Dec. 19, 1931				Corresponding week, 1930		Death rate <sup>2</sup> for the first 51 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1931	1930
Richmond <sup>6</sup> .....	56	15.8	4	58	13.9	5	15.4	14.8
White.....	39	15.5	3	66	12.8	2	13.0	12.2
Colored.....	17	16.8	1	43	16.7	3	21.3	21.3
Rochester.....	82	12.9	3	28	11.1	5	11.7	11.5
St. Louis.....	209	13.0	17	61	12.6	13	14.7	14.0
St. Paul.....	57	10.8	9	92	10.0	2	10.4	10.1
Salt Lake City <sup>7</sup> .....	18	6.6	1	15	14.1	2	11.9	12.6
San Antonio.....	67	14.6	9	.....	14.3	2	14.1	15.8
San Diego.....	48	16.0	1	21	16.7	4	13.7	14.5
San Francisco.....	189	15.2	5	33	15.6	4	13.0	13.1
Schenectady.....	20	10.8	3	89	8.2	1	10.9	11.0
Seattle.....	76	10.7	6	59	14.4	6	11.3	10.9
Somerville.....	23	11.4	1	31	12.5	4	8.9	9.7
South Bend.....	19	9.2	1	26	8.9	1	8.0	9.0
Spokane.....	27	12.1	0	0	11.7	1	12.4	12.4
Springfield, Mass.....	30	10.3	4	67	14.9	5	11.4	12.1
Syracuse.....	56	13.7	5	61	11.4	7	11.5	11.6
Tacoma.....	32	15.5	4	111	9.7	1	12.4	12.5
Toledo.....	53	9.3	1	9	13.2	6	11.8	12.7
Trenton.....	41	17.3	2	37	13.1	4	16.2	16.5
Utica.....	37	18.9	1	28	20.0	2	14.3	14.6
Washington, D. C. <sup>6</sup> .....	132	14.0	13	72	14.1	4	15.8	15.1
White.....	83	12.2	4	33	11.9	2	13.5	13.0
Colored.....	49	18.9	9	154	19.9	2	22.1	20.8
Waterbury.....	19	9.8	1	25	6.8	1	9.5	9.4
Wilmington, Del. <sup>7</sup> .....	33	16.1	1	23	15.7	2	13.8	14.4
Worcester.....	46	12.2	6	86	14.9	1	12.0	12.7
Yonkers.....	24	9.0	2	48	11.9	2	8.3	8.2
Youngstown.....	18	5.4	2	28	10.7	4	9.7	10.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 77 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended December 26, 1931, and December 27, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 26, 1931, and December 27, 1930

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930
<b>New England States</b>								
Maine.....	17	8	3	3	698	18	0	0
New Hampshire.....	1	1		12	7	3	0	0
Vermont.....		2			88		0	0
Massachusetts.....	50	62	7	6	249	273	0	3
Rhode Island.....	5	8			473	1	0	0
Connecticut.....	8	11	5	3	58	118	1	0
<b>Middle Atlantic States:</b>								
New York.....	119	104	113	125	160	151	4	6
New Jersey.....	29	48	7	13	22	120	1	2
Pennsylvania.....	88	130			432	408	5	0
<b>East North Central States</b>								
Ohio.....	101	69	2	7	103	24	2	2
Indiana.....	85	35	26	1	39	138	9	4
Illinois.....	95	146		12	29	208	3	7
Michigan.....	40	16		2	75	49	3	1
Wisconsin.....	8	14	23	41	24	191	0	5
<b>West North Central States:</b>								
Minnesota.....	19	10	1	2	14	24	1	1
Iowa.....	24	12			2		0	24
Missouri.....	56	25	6	3	3	656	4	3
North Dakota.....	10	3					0	0
South Dakota.....	5	13		1	33	5	0	0
Nebraska.....	20	4		2	25	2	1	3
Kansas.....	38	24	2	1	12	10	1	1
<b>South Atlantic States:</b>								
Delaware.....	11	3			1		0	0
Maryland <sup>1</sup> .....	61	39	22	12	10	18	0	0
District of Columbia.....	12	10		2		12	0	1
Virginia.....								

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 26, 1931, and December 27, 1930—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930
<b>South Atlantic States—Continued.</b>								
West Virginia.....	41	11	8	16	258	31	1	0
North Carolina.....	39	23	4	9	35	50	1	1
South Carolina.....	9	12	252	588	9		0	1
Georgia <sup>1</sup> .....	29	23	35	42	2	32	1	0
Florida.....	19	0	1	1		25	1	0
<b>East South Central States:</b>								
Kentucky.....	42					19	0	1
Tennessee.....	52	20	31	46	8	24	5	1
Alabama <sup>1</sup> .....	43	39	21	36	28	122	0	0
Mississippi.....	36	22					0	4
<b>West South Central States</b>								
Arkansas.....	19	3	7	25	11	1	1	1
Louisiana.....	33	12	8	10	2		1	0
Oklahoma <sup>1</sup> .....	26	29	19	48	7	19	0	2
Texas.....		33		22		81		1
<b>Mountain States:</b>								
Montana.....	1				43	1	0	0
Idaho.....	2					10	0	1
Wyoming.....	2	1			3		0	1
Colorado.....	3	8			5	43	1	2
New Mexico.....	27	6	1		8	121	1	0
Arizona.....	6	3	3	7		28	0	1
Utah <sup>1</sup> .....			1	15	3	1	0	0
<b>Pacific States:</b>								
Washington.....	1	11			149	6	0	0
Oregon.....	2	5	34	27	9	52	0	0
California <sup>1</sup> .....	60	46	79	57	43	109	2	8

Division and State	Polioomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930
<b>New England States.</b>								
Maine.....	0	3	18	19	0	0	2	2
New Hampshire.....	0	0	12	2	0	0	0	2
Vermont.....	0	0	10	4	25	0	1	0
Massachusetts.....	2	6	262	222	0	0	1	8
Rhode Island.....	0	0	25	31	0	0	0	0
Connecticut.....	1	0	57	55	12	0	1	1
<b>Middle Atlantic States:</b>								
New York.....	7	1	369	436	3	7	23	8
New Jersey.....	2	0	113	142	0	0	1	5
Pennsylvania.....	2	1	428	370	0	0	10	19
<b>East North Central States:</b>								
Ohio.....	2	2	419	381	6	45	10	18
Indiana.....	1	0	83	172	8	53	3	3
Illinois.....	2	4	287	389	36	53	19	17
Michigan.....	4	0	246	134	7	12	8	15
Wisconsin.....	1	1	106	122	13	9	0	2
<b>West North Central States:</b>								
Minnesota.....	1	3	75	61	6	4	1	2
Iowa.....	1	2	35	104	48	17	5	0
Missouri.....	1	0	55	128	14	3	6	4
North Dakota.....	0	1	17	9	11	2	0	0
South Dakota.....	0	1	7	6	3	20	6	1
Nebraska.....	0	2	19	37	12	22	0	1
Kansas.....	0	2	61	46	8	47	1	1

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 1931, 9 cases: 2 cases in Georgia, 6 cases in Alabama, and 1 case in California.

<sup>3</sup> Figures for 1931 are exclusive of Oklahoma City and Tulsa.



*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 26, 1931, and December 27, 1930—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930	Week ended Dec. 26, 1931	Week ended Dec. 27, 1930
<b>South Atlantic States:</b>								
Delaware.....	0	0	6	12	0	0	1	0
Maryland <sup>1</sup> .....	0	0	74	75	0	0	9	8
District of Columbia.....	0	1	8	23	0	0	1	2
Virginia.....	1							
West Virginia.....	1	1	49	62	2	13	14	8
North Carolina.....	2	1	49	22	0	0	2	1
South Carolina.....	0	1	7	23	0	2	8	5
Georgia <sup>2</sup> .....	0	0	7	28	0	0	5	6
Florida.....	1	0	0	8	1	0	0	1
<b>East South Central States:</b>								
Kentucky.....	0	0	66	43	0	10	9	5
Tennessee.....	1	0	63	22	9	0	16	5
Alabama <sup>3</sup> .....	0	2	35	52	1	6	16	12
Mississippi.....	0	0	14	10	6	5	3	5
<b>West South Central States:</b>								
Arkansas.....	0	0	27	9	7	3	5	6
Louisiana.....	0	1	12	11	0	16	39	9
Oklahoma <sup>4</sup> .....	0	0	46	66	1	24	8	7
Texas.....		0		19		12		3
<b>Mountain States:</b>								
Montana.....	1	0	35	24	13	11	1	0
Idaho.....	0	1	3	1	0	0	0	0
Wyoming.....	0	1	2	6	0	0	0	0
Colorado.....	0	0	23	55	11	1	0	1
New Mexico.....	1	0	17	8	0	0	10	4
Arizona.....	1	0	6	3	0	0	1	0
Utah <sup>3</sup> .....	0	0	7	5	0	0	0	0
<b>Pacific States</b>								
Washington.....	1	1	35	46	45	13	1	1
Oregon.....	1	2	11	8	5	9	2	0
California <sup>4</sup> .....	1	12	90	76	1	21	3	7

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 1931, 9 cases. 2 cases in Georgia, 6 cases in Alabama, and 1 case in California.

<sup>4</sup> Figures for 1931 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Me-ningo-coccus menin-gitis	Diph-theria	Influ-enza	Ma-laria	Mea-sles	Pel-lagra	Pollo-mye-litis	Scarlet fever	Small-pox	Ty-phoid fever
<i>October, 1931</i>										
Hawaii Territory....	2	17			99		3	5	0	5
<i>November, 1931</i>										
Illinois.....	21	586	30	15	210	1	87	1, 176	71	83
Minnesota.....	7	114	7		72		92	197	10	12
Missouri.....	7	412	46	30	80	1	6	465	9	66
Montana.....	2	18	11		571		8	127	6	11
New York.....	41	419			604		184	1, 787	70	92
Oregon.....		8	132		20		1	71	36	13
Rhode Island.....		34			571		3	71	0	0
South Dakota.....		39	8		216		6	61	44	11

## October, 1931

Hawaii Territory:	Cases
Chicken pox.....	20
Conjunctivitis, follicular.....	205
Hookworm disease.....	44
Impetigo contagiosa.....	3
Leprosy.....	3
Mumps.....	10
Trachoma.....	18
Whooping cough.....	3

## November, 1931

Chicken pox:	
Illinois.....	1,077
Minnesota.....	353
Missouri.....	246
Montana.....	174
New York.....	1,439
Oregon.....	253
Rhode Island.....	70
South Dakota.....	120
Dysentery:	
Illinois.....	33
Illinois (amebic).....	1
Illinois (bacillary).....	5
Minnesota.....	3
Missouri.....	8
Montana.....	1
New York.....	20
Oregon.....	3
German measles:	
Illinois.....	19
Montana.....	9
New York.....	46
Rhode Island.....	7
Impetigo contagiosa:	
Illinois.....	1
Montana.....	11
Oregon.....	64
Lead poisoning:	
Illinois.....	13
Lethargic encephalitis:	
Illinois.....	1
Oregon.....	1
Mumps:	
Illinois.....	133
Missouri.....	19
Montana.....	4
New York.....	398
Oregon.....	56
Rhode Island.....	38
South Dakota.....	33
Ophthalmia neonatorum:	
Illinois.....	34
Missouri.....	1
New York.....	2
Paratyphoid fever:	
Illinois.....	4
New York.....	8

Puerperal septicemia.	Cases
Illinois.....	5
New York.....	8
Rabies in animals:	
Illinois.....	3
Minnesota.....	1
Missouri.....	5
New York.....	3
Oregon.....	1
Rhode Island.....	1
Rabies in man.	
Illinois.....	1
Scabies.	
Oregon.....	81
Septic sore throat:	
Illinois.....	5
Missouri.....	57
Montana.....	4
New York.....	9
Oregon.....	2
Silicosis, pulmonary:	
Montana.....	9
Tetanus:	
Illinois.....	7
New York.....	9
Trachoma:	
Illinois.....	31
Missouri.....	40
Montana.....	2
Oregon.....	3
South Dakota.....	9
Trichinosis.	
New York.....	5
Tularaemia.	
Illinois.....	3
Minnesota.....	6
Missouri.....	1
Typhus fever:	
New York.....	1
Undulant fever:	
Illinois.....	12
Minnesota.....	9
Missouri.....	8
Montana.....	2
New York.....	22
Oregon.....	2
Vincent's angina:	
Illinois.....	19
Montana.....	1
New York.....	65
Oregon.....	8
Whooping cough.	
Illinois.....	1,158
Minnesota.....	38
Missouri.....	440
Montana.....	60
New York.....	1,109
Oregon.....	27
Rhode Island.....	19
South Dakota.....	33

# **ADMISSIONS TO HOSPITALS FOR THE INSANE, OCTOBER, 1929**

Reports for the month of October, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 119 hospitals, located in 41 States, the District of Columbia, and the Territory of Hawaii. The 119 hospitals had 184,720 patients on October 31, 1929, 98,200 males and 86,520 females, the ratio being 113 males per 100 females.

The following table shows the number of new admissions to these hospitals for the month of October, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	10	7	17
2. Senile psychoses.....	151	123	274
3. Psychoses with cerebral arteriosclerosis.....	183	107	290
4. General paralysis.....	231	60	291
5. Psychoses with cerebral syphilis.....	24	16	40
6. Psychoses with Huntington's chorea.....	4	3	7
7. Psychoses with brain tumor.....	2	0	2
8. Psychoses with other brain or nervous disease.....	36	14	50
9. Alcoholic psychoses.....	137	14	151
10. Psychoses due to drugs and other exogenous toxins.....	11	7	18
11. Psychoses with pellagra.....	17	23	40
12. Psychoses with other somatic diseases.....	33	42	75
13. Manic-depressive psychoses.....	199	240	439
14. Involution melancholia.....	17	47	64
15. Dementia praecox (schizophrenia).....	355	297	652
16. Paranoia and paranoid conditions.....	38	42	80
17. Epileptic psychoses.....	32	27	59
18. Psychoneuroses and neuroses.....	25	44	69
19. Psychoses with psychopathic personality.....	24	13	37
20. Psychoses with mental deficiency.....	50	50	100
21. Undiagnosed psychoses.....	142	101	243
22. Without psychosis.....	177	57	234
Total.....	1,898	1,334	3,232

During the month of October, 1929, there were 3,232 new admissions to the hospitals, 58.7 per cent of these being males and 41.3 per cent females, the ratio being 142 males per 100 females. Four hundred and seventy-seven of the new admissions were reported as undiagnosed or "without psychosis." There were 2,755 new admissions for which a provisional diagnosis was made. Of these 2,755 patients, cases of dementia praecox constituted 23.7 per cent; manic-depressive psychoses, 15.9 per cent; general paralysis, 10.6 per cent; psychoses with cerebral arteriosclerosis, 10.5 per cent; and senile psychoses, 9.9 per cent. These five classes accounted for 1,946 patients, or 70.6 per cent of the new admissions for which a diagnosis was given.

The following table shows the number of patients in the hospitals and on parole on October 31, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals.....	87, 476	78, 068	165, 544
On parole or otherwise absent, but still on books.....	10, 724	8, 452	19, 176
Total.....	98, 200	86, 520	184, 720

Of the 184,720 patients, 10,724 males and 8,452 females were on parole or otherwise absent but still on the books at the end of the month—10.9 per cent of the males, 9.8 per cent of the females, and 10.4 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 94 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 32,650,000. The estimated population of the 87 cities reporting deaths is more than 31,105,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended December 19, 1931, and December 20, 1930*

	1931	1930	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1, 958	1, 475	-----
94 cities.....	644	578	920
Measles:			
45 States.....	3, 246	3, 463	-----
94 cities.....	807	1, 214	-----
Meningococcus meningitis:			
46 States.....	69	73	-----
94 cities.....	41	39	-----
Poliomyelitis:			
46 States.....	78	91	-----
Scarlet fever:			
46 States.....	3, 944	3, 895	-----
94 cities.....	1, 331	1, 435	1, 122
Smallpox:			
46 States.....	312	627	-----
94 cities.....	12	57	29
Typhoid fever:			
46 States.....	287	313	-----
94 cities.....	32	53	37
<i>Deaths reported</i>			
Influenza and pneumonia:			
87 cities.....	677	705	-----
Smallpox:			
87 cities.....	0	0	-----

## City reports for week ended December 19, 1931

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	4	1	1		0	22	4	2
New Hampshire:								
Concord	0	0	0		0	0	0	0
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	0	0
Massachusetts:								
Boston	41	39	21	2	1	7	15	15
Fall River	4	5	3		0	3	1	2
Springfield	14	5	0		0	2	6	4
Worcester	6	6	3		0	0	45	5
Rhode Island:								
Pawtucket	0	2	0		0	0	0	0
Providence	4	8	4		0	231	6	8
Connecticut:								
Bridgeport		5						
Hartford	3	7	2		0	0	7	4
New Haven	33	2	0	1	0	0	4	3
MIDDLE ATLANTIC								
New York:								
Buffalo		15						
New York	150	175	120	13	5	28	47	145
Rochester	17	5	1	1	0	34	5	3
Syracuse	13	2	0		0	1	1	4
New Jersey:								
Camden	2	6	6		0	1	0	2
Newark	23	17	1	1	0	2	7	16
Trenton	1	2	1		0	0	3	0
Pennsylvania:								
Philadelphia	99	63	6	11	7	2	14	56
Pittsburgh	49	20	10	1	1	104	67	18
Reading	26	2	0		0	0	6	1
Scranton	2		0		0	1	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	15	11	15		1	0	0	5
Cleveland	186	37	15	12	3	43	70	13
Columbus	4	6	21	2	2	1	3	3
Toledo	56	8	6		0	2	2	6
Indiana:								
Fort Wayne	3	4	9		0	0	0	1
Indianapolis	47	9	3		0	1	48	7
South Bend	9	1	0		0	2	0	2
Terre Haute	5	1	2		0	0	0	0
Illinois:								
Chicago	125	120	63	2	1	21	5	48
Springfield	1	2	1		0	0	1	2

## City reports for week ended December 19, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL—continued								
Michigan:								
Detroit.....	69	55	41	-----	2	6	13	14
Flint.....	32	3	0	-----	0	0	15	3
Grand Rapids.....	7	1	0	-----	1	19	6	0
Wisconsin:								
Kenosha.....	11	1	0	-----	0	0	4	0
Madison.....	4	3	6	-----	1	1	0	-----
Milwaukee.....	74	14	2	-----	0	6	32	4
Racine.....	29	2	0	-----	0	0	59	1
Superior.....	5	0	0	-----	0	0	11	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	15	0	0	-----	0	2	0	1
Minneapolis.....	81	17	6	-----	0	1	29	4
St. Paul.....	9	6	4	1	1	0	1	4
Iowa:								
Davenport.....	6	1	0	-----	-----	0	0	-----
Des Moines.....	0	1	19	-----	-----	0	0	-----
Sioux City.....	16	0	5	-----	-----	0	0	-----
Waterloo.....	11	0	1	-----	-----	0	1	-----
Missouri:								
Kansas City.....	18	7	16	-----	0	0	2	7
St. Joseph.....	1	1	5	-----	0	0	0	0
St. Louis.....	28	41	35	1	1	1	2	7
North Dakota:								
Fargo.....	15	0	0	-----	0	7	0	1
South Dakota:								
Aberdeen.....	14	0	0	-----	-----	25	0	-----
Nebraska:								
Omaha.....	10	7	15	-----	0	0	0	6
Kansas:								
Topeka.....	6	1	3	-----	0	1	0	0
Wichita.....	18	2	8	-----	0	1	0	5
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	2	2	-----	0	0	0	7
Maryland:								
Baltimore.....	38	23	13	13	3	2	45	23
Cumberland.....	5	0	0	-----	0	0	0	0
Frederick.....	0	0	2	-----	0	1	0	0
District of Columbia:								
Washington.....	3	17	16	1	0	0	0	10
Virginia:								
Lynchburg.....	4	3	1	-----	0	0	0	1
Norfolk.....	11	2	2	-----	0	0	4	1
Richmond.....	0	9	11	-----	1	0	0	5
Roanoke.....	10	2	1	-----	0	0	0	0
West Virginia:								
Charleston.....	1	1	2	-----	0	1	0	0
Huntington.....	0	-----	3	-----	0	0	0	0
Wheeling.....	8	2	0	-----	0	1	0	4
North Carolina:								
Raleigh.....	4	2	1	-----	0	7	0	1
Wilmington.....	3	1	1	-----	0	0	0	1
Winston-Salem.....	10	2	1	-----	0	1	1	1
South Carolina:								
Charleston.....	0	1	1	15	0	0	0	3
Columbia.....	0	0	1	-----	0	0	0	10
Greenville.....	0	-----	0	-----	0	0	0	0
Georgia:								
Atlanta.....	6	6	2	8	2	0	1	3
Brunswick.....	0	0	0	-----	0	0	1	0
Savannah.....	1	3	3	13	0	0	1	3
Florida:								
Miami.....	4	2	4	-----	0	0	0	3
Tampa.....	1	1	2	-----	0	0	0	1

## City reports for week ended December 19, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	2	0	-----	0	0	0	1
Lexington.....	1	-----	2	-----	0	0	0	1
Louisville.....	2	-----	5	-----	0	0	1	11
Tennessee:								
Memphis.....	3	6	12	-----	1	2	0	8
Nashville.....	1	2	3	-----	0	0	0	4
Alabama:								
Birmingham.....	4	6	8	2	0	0	3	6
Mobile.....	0	1	3	-----	0	0	0	0
Montgomery.....	0	2	1	1	-----	7	3	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	2	1	0	-----	-----	0	1	-----
Little Rock.....	1	1	3	-----	0	0	0	0
Louisiana:								
New Orleans.....	1	14	13	1	3	0	0	10
Shreveport.....	3	1	1	-----	0	12	0	1
Oklahoma:								
Muskogee.....	11	-----	3	-----	0	0	1	0
Texas:								
Dallas.....	0	16	17	-----	0	1	0	11
Fort Worth.....	4	7	15	-----	0	1	0	3
Galveston.....	0	1	8	-----	0	0	0	1
Houston.....	0	10	11	-----	0	0	0	10
San Antonio.....	0	4	3	-----	2	0	0	8
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	32	0	0
Great Falls.....	7	0	0	-----	0	0	0	0
Helena.....	0	0	0	-----	0	51	0	0
Missoula.....	0	0	1	-----	0	0	0	0
Idaho:								
Boise.....	-----	0	-----	-----	-----	-----	-----	-----
Colorado:								
Denver.....	41	8	10	-----	2	2	3	18
Pueblo.....	15	1	0	-----	0	0	0	1
New Mexico:								
Albuquerque.....	8	1	3	-----	0	0	1	2
Arizona:								
Phoenix.....	0	0	0	-----	0	0	0	2
Utah:								
Salt Lake City.....	63	3	0	-----	0	0	1	3
Nevada:								
Reno.....	0	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	39	4	0	-----	-----	93	24	-----
Spokane.....	12	1	0	-----	-----	0	0	-----
Tacoma.....	13	3	1	-----	0	0	3	3
Oregon:								
Portland.....	13	10	0	9	1	2	15	13
Salem.....	5	0	0	5	0	0	-----	1
California:								
Los Angeles.....	34	33	36	48	3	5	2	24
Sacramento.....	4	2	1	2	2	36	1	10
San Francisco.....	52	14	4	32	1	16	5	14

## City reports for week ended December 19, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	2	4	0	0	0	0	0	0	0	1	23
New Hampshire:											
Concord.....	0	6	0	0	0	0	0	0	0	0	12
Nashua.....	0	0	0	0	0	0	0	0	0	0	---
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	0	1
Massachusetts:											
Boston.....	68	82	0	0	0	4	1	1	0	35	199
Fall River.....	4	9	0	0	0	2	0	0	0	3	24
Springfield.....	7	9	0	0	0	1	0	0	0	4	32
Worcester.....	12	38	0	0	0	1	0	0	0	15	46
Rhode Island:											
Pawtucket.....	3	0	0	0	0	0	0	0	0	0	---
Providence.....	11	21	0	0	0	1	0	0	0	7	50
Connecticut:											
Bridgeport.....	8	---	0	---	---	---	0	---	---	---	---
Hartford.....	6	3	0	0	0	0	0	0	0	3	40
New Haven.....	3	3	0	0	0	0	0	0	0	12	53
MIDDLE ATLANTIC											
New York:											
Buffalo.....	24	---	0	---	---	---	0	---	---	---	---
New York.....	149	165	1	1	0	87	10	9	1	110	1,406
Rochester.....	10	46	0	0	0	1	1	1	0	6	79
Syracuse.....	10	16	0	0	0	0	0	0	0	75	56
New Jersey:											
Camden.....	4	5	0	0	0	0	0	0	0	1	32
Newark.....	16	16	0	0	0	3	1	0	0	28	97
Trenton.....	3	3	0	0	0	4	0	0	0	0	41
Pennsylvania:											
Philadelphia.....	73	115	0	0	0	33	2	1	0	134	534
Pittsburgh.....	37	48	0	0	0	5	1	0	0	38	159
Reading.....	2	1	0	0	0	2	0	0	0	8	31
Scranton.....	---	17	---	0	0	0	---	0	0	1	---
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	17	36	0	1	0	7	0	0	0	7	124
Cleveland.....	35	70	0	0	0	16	1	0	0	133	187
Columbus.....	11	17	1	0	0	4	0	0	0	11	75
Toledo.....	13	9	0	0	0	6	1	1	0	36	53
Indiana:											
Fort Wayne.....	4	1	1	0	0	0	0	0	0	2	22
Indianapolis.....	11	6	4	0	0	3	0	0	0	9	---
South Bend.....	3	2	0	0	0	1	0	0	0	0	19
Terre Haute.....	3	0	1	0	0	1	0	0	0	0	21
Illinois:											
Chicago.....	116	121	1	6	0	35	3	0	0	170	638
Springfield.....	2	7	0	0	0	1	0	0	0	6	13
Michigan:											
Detroit.....	91	132	0	0	0	15	1	1	0	98	249
Flint.....	11	4	1	0	0	0	0	0	0	4	24
Grand Rapids.....	10	9	0	0	0	0	0	0	0	5	34
Wisconsin:											
Kenosha.....	1	4	0	0	0	0	0	0	0	8	10
Madison.....	3	1	0	0	---	---	0	0	---	1	---
Milwaukee.....	23	21	0	0	0	1	0	0	0	86	91
Racine.....	4	3	0	0	0	0	0	0	0	6	12
Superior.....	3	1	0	0	0	1	0	0	0	0	5
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	10	1	1	0	0	2	0	0	0	1	23
Minneapolis.....	42	21	0	0	0	1	0	0	0	17	96
St. Paul.....	20	2	2	0	0	7	1	0	0	12	60



## City reports for week ended December 19, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport.....	1	4	0	0	-----	-----	0	0	-----	0	-----
Des Moines.....	9	2	0	0	-----	-----	0	0	-----	0	29
Sioux City.....	3	2	0	0	-----	-----	0	0	-----	1	-----
Waterloo.....	1	0	0	0	-----	-----	0	0	-----	8	-----
Missouri:											
Kansas City.....	15	13	1	0	0	4	0	0	0	18	79
St. Joseph.....	3	0	0	0	0	2	0	0	0	0	21
St. Louis.....	36	17	0	0	0	15	2	0	0	89	206
North Dakota:											
Fargo.....	2	3	0	0	0	0	0	0	0	2	5
South Dakota:											
Aberdeen.....	1	1	0	0	-----	-----	0	0	-----	5	-----
Nebraska:											
Omaha.....	7	10	2	2	0	2	0	0	0	1	53
Kansas:											
Topeka.....	2	0	1	0	0	1	0	0	0	4	10
Wichita.....	4	3	0	0	0	2	0	0	0	2	46
SOUTH ATLANTIC											
Delaware											
Wilmington.....	3	5	0	0	0	1	0	1	0	7	33
Maryland											
Baltimore.....	26	24	0	0	0	21	2	2	2	121	239
Cumberland.....	1	3	0	0	0	0	0	0	0	2	10
Frederick.....	1	4	0	0	0	0	0	0	0	10	5
District of Col.											
Washington.....	20	25	0	0	0	9	1	0	0	24	132
Virginia:											
Lynchburg.....	2	1	0	0	0	0	0	0	0	7	10
Norfolk.....	2	6	0	0	0	1	0	0	0	1	-----
Richmond.....	8	19	0	0	0	2	0	1	0	3	54
Roanoke.....	3	2	0	0	0	0	0	0	0	0	14
West Virginia:											
Charleston.....	2	0	0	0	0	1	0	0	0	1	18
Huntington.....	-----	1	-----	0	0	0	-----	0	0	0	1
Wheeling.....	2	2	0	0	0	0	0	0	0	8	14
North Carolina:											
Raleigh.....	2	3	0	0	0	0	0	0	0	0	15
Wilmington.....	1	1	0	0	0	0	0	0	0	4	4
Winston-Salem.....	3	0	0	0	0	0	0	0	0	0	11
South Carolina:											
Charleston.....	0	2	0	0	0	1	0	0	0	0	21
Columbia.....	1	4	0	0	0	0	0	0	0	0	27
Greenville.....	-----	2	-----	0	0	0	-----	0	0	0	-----
Georgia:											
Atlanta.....	6	6	0	0	0	4	0	0	0	0	78
Brunswick.....	0	0	0	0	0	0	0	1	0	0	2
Savannah.....	0	0	0	0	0	1	1	0	0	0	36
Florida:											
Miami.....	3	0	0	0	0	1	0	0	0	0	22
Tampa.....	1	1	0	0	0	0	0	0	0	2	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	4	0	0	0	1	0	0	0	0	15
Lexington.....	-----	1	-----	0	0	1	-----	0	0	2	19
Louisville.....	-----	14	-----	0	0	1	-----	0	0	8	73
Tennessee:											
Memphis.....	6	7	0	0	0	4	1	2	0	25	65
Nashville.....	4	0	0	0	0	1	1	1	0	0	38
Alabama:											
Birmingham.....	4	14	0	0	0	4	1	1	0	1	59
Mobile.....	1	0	0	0	0	0	0	0	0	0	15
Montgomery.....	2	2	0	0	-----	-----	0	0	-----	8	-----

\* 2 deaths nonresidents.

## City reports for week ended December 19, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CEN- TRAL											
Arkansas:											
Fort Smith.....	1	0	0	0			0	0		2	
Little Rock.....	2	1	0	0	0	1	1	0	0	0	2
Louisiana:											
New Orleans....	8	9	0	1	0	11	2	6	2	1	148
Shreveport.....	0	1	0	0	0	3	0	1	1	2	37
Oklahoma:											
Muskogee.....		0		0	0	0		0	0	2	
Texas:											
Dallas.....	8	14	2	0	0	2	0	2	0	3	57
Fort Worth.....	5	6	1	0	0	0	0	0	0	0	33
Galveston.....	0	0	0	0	0	0	0	0	0	0	14
Houston.....	3	4	1	0	0	1	0	0	0	0	78
San Antonio....	2	1	0	0	0	8	0	1	2	0	67
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	2
Great Falls....	3	0	1	0	0	1	0	0	0	0	5
Helena.....	0	0	0	0	0	0	0	0	0	0	3
Missoula.....	0	1	0	0	0	0	0	0	0	0	3
Idaho:											
Boise.....	1		0				0				
Colorado:											
Denver.....	14	17	0	0	0	3	1	0	0	12	75
Pueblo.....	1	0	0	0	0	1	0	0	0	5	6
New Mexico:											
Albuquerque....	1	0	0	0	0	0	0	0	0	0	8
Arizona:											
Phoenix.....	2	0		0	0	4		0	0	0	
Utah:											
Salt Lake City..	2	10	1	0	0	0	0	0	0	0	18
Nevada:											
Reno.....	0	1	0	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle.....	9	8	0	0			1	0		2	
Spokane.....	8	3	4	0			0	0		0	
Tacoma.....	4	1	2	0	0	0	0	0	0	3	32
Oregon:											
Portland.....	8	3	5	1	0	1	0	0	0	2	80
Salem.....	1	0	0	0	0	0		0	0	0	10
California:											
Los Angeles....	29	31	1	0	0	15	2	0	0	9	321
Sacramento....	3	0	1	0	0	2	0	0	0	0	42
San Francisco...	15	5	0	1	0	18	0	1	0	3	201

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Typhoid		Polio-myelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland.....	1	0	0	0	0	0	0	0	0
Massachusetts:									
Boston.....	2	0	0	0	0	0	1	0	0
Worcester.....	0	0	0	0	0	0	0	1	0
Rhode Island:									
Providence.....	0	0	0	0	0	0	0	1	0
Connecticut:									
Hartford.....	1	0	0	0	0	0	0	0	0

## City reports for week ended December 19, 1931—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Pollomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York <sup>1</sup> .....	6	3	0	0	0	0	1	3	1
Pennsylvania:									
Philadelphia.....	3	0	1	1	0	0	0	0	0
Pittsburgh.....	1	1	0	0	0	0	0	0	0
Scranton.....	0	0	0	0	0	0	0	1	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	1	2	0	0	0	0	0	0	0
Cleveland.....	0	0	0	0	0	1	1	0	0
Indiana:									
Indianapolis.....	8	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	3	3	0	0	0	0	0	2	1
Michigan:									
Detroit.....	2	1	0	0	0	0	0	1	0
Grand Rapids.....	0	0	0	0	0	0	0	1	0
Wisconsin:									
Milwaukee.....	1	1	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	0	0	0	0	0	0	0	1	0
St. Paul.....	0	0	0	0	0	0	0	2	0
Missouri:									
Kansas City.....	1	0	0	0	0	0	0	1	0
St. Louis.....	7	1	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	0	0	0	0	0	0	0	1	1
<b>SOUTH ATLANTIC<sup>1 2 3</sup></b>									
Maryland:									
Baltimore.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	0	0	0	0	2	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Louisville.....	1	1	0	0	0	0	0	0	0
Tennessee:									
Memphis.....	0	0	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans.....	1	1	0	0	0	1	0	0	0
<b>PACIFIC</b>									
Washington:									
Spokane.....	1	0	0	0	0	0	0	0	0
California:									
Los Angeles.....	0	0	0	0	0	0	0	0	0
San Francisco.....	1	1	0	0	1	0	0	1	0

<sup>1</sup> Typhus fever, 3 cases: 1 case at New York City, N. Y.; and 2 cases at Savannah, Ga.<sup>2</sup> Rabies (in man), 1 case and 1 death at Norfolk, Va.<sup>3</sup> Dengue, 1 case at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 19, 1931, compared with those for a like period ended December 20, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

*Summary of weekly reports from cities, November 15 to December 19, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Nov 21, 1931	Nov 22, 1930	Nov. 28, 1931	Nov 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec 12, 1931	Dec 13, 1930	Dec. 19, 1931	Dec. 20, 1930
98 cities.....	96	100	84	87	101	<sup>2</sup> 90	93	<sup>2</sup> 87	<sup>1</sup> 103	<sup>2</sup> 94
New England.....	70	123	67	87	58	121	70	128	<sup>4</sup> 88	143
Middle Atlantic.....	53	52	58	48	54	58	59	47	<sup>5</sup> 68	62
East North Central.....	91	124	71	122	14	112	86	120	104	116
West North Central.....	171	110	138	110	222	101	168	97	187	89
South Atlantic.....	172	154	114	66	154	112	118	122	118	108
East South Central.....	169	275	145	138	161	143	163	138	157	84
West South Central.....	206	171	206	153	244	<sup>2</sup> 147	287	<sup>1</sup> 132	189	<sup>2</sup> 202
Mountain.....	17	26	26	79	72	18	26	26	<sup>6</sup> 99	18
Pacific.....	98	63	67	95	88	65	61	55	82	83

## MEASLES CASE RATES

	85	126	90	107	113	<sup>2</sup> 142	118	<sup>4</sup> 162	<sup>1</sup> 130	<sup>2</sup> 194
98 cities.....										
New England.....	233	179	315	162	481	220	656	273	<sup>4</sup> 683	271
Middle Atlantic.....	92	76	82	69	111	85	89	85	<sup>5</sup> 81	87
East North Central.....	29	31	15	28	31	28	28	26	60	28
West North Central.....	19	767	13	(49)	27	933	46	1,077	25	1,416
South Atlantic.....	34	64	28	41	43	62	22	80	26	138
East South Central.....	29	149	35	66	35	155	17	209	52	275
West South Central.....	10	3	24	10	27	<sup>2</sup> 11	17	<sup>2</sup> 11	44	<sup>2</sup> 18
Mountain.....	757	326	1,236	282	757	53	809	150	<sup>6</sup> 767	167
Pacific.....	149	28	123	10	180	26	210	26	204	6

## SCARLET FEVER CASE RATES

	187	195	155	174	179	<sup>2</sup> 202	222	<sup>2</sup> 221	<sup>2</sup> 212	<sup>2</sup> 274
98 cities.....										
New England.....	260	237	262	264	293	268	397	259	<sup>4</sup> 451	351
Middle Atlantic.....	163	159	147	148	155	178	199	181	<sup>5</sup> 195	208
East North Central.....	241	263	169	221	229	257	281	315	264	306
West North Central.....	132	219	117	139	161	198	143	209	138	279
South Atlantic.....	259	216	176	188	172	230	175	230	201	208
East South Central.....	145	209	122	215	128	299	250	377	157	197
West South Central.....	78	94	95	132	108	<sup>2</sup> 92	112	<sup>2</sup> 84	101	<sup>2</sup> 73
Mountain.....	218	282	191	229	218	141	261	211	<sup>6</sup> 262	300
Pacific.....	129	87	108	84	100	97	153	71	94	83

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.

<sup>2</sup> Shreveport, La., not included.

<sup>3</sup> Bridgeport, Conn., Buffalo, N. Y., and Boise, Idaho, not included.

<sup>4</sup> Bridgeport, Conn., not included.

<sup>5</sup> Buffalo, N. Y., not included.

<sup>6</sup> Boise, Idaho, not included.

*Summary of weekly reports from cities, November 15 to December 19, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930—Continued*

## SMALLPOX CASE RATES

	Week ended—									
	Nov. 21, 1931	Nov. 22, 1930	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930
98 cities .....	1	3	2	8	5	7	4	14	2	9
New England.....	0	0	0	0	55	0	7	0	40	0
Middle Atlantic.....	0	0	0	0	1	0	0	0	0	0
East North Central.....	0	0	0	4	0	1	2	3	4	6
West North Central.....	10	23	11	68	4	48	13	122	4	48
South Atlantic.....	0	0	0	0	0	0	0	0	0	0
East South Central.....	0	0	6	0	0	0	0	0	0	0
West South Central.....	0	3	20	3	3	4	17	17	3	15
Mountain.....	0	44	0	35	0	106	0	150	0	115
Pacific.....	6	6	6	8	10	10	10	6	2	10

## TYPHOID FEVER CASE RATES

	12	15	7	10	7	10	9	8	5	8
98 cities .....	12	15	7	10	7	10	9	8	5	8
New England.....	10	17	2	12	5	7	10	19	43	10
Middle Atlantic.....	8	5	4	3	5	8	6	6	15	3
East North Central.....	5	9	5	4	4	10	3	7	1	9
West North Central.....	8	23	8	8	4	6	6	6	0	8
South Atlantic.....	24	28	34	32	16	18	32	4	10	12
East South Central.....	41	12	6	12	12	12	17	18	23	36
West South Central.....	41	84	7	70	27	26	34	22	34	26
Mountain.....	9	53	0	9	26	9	0	0	0	9
Pacific.....	18	10	2	6	10	10	6	6	2	6

## INFLUENZA DEATH RATES

	7	10	7	9	7	9	8	9	8	10
91 cities .....	7	10	7	9	7	9	8	9	8	10
New England.....	7	7	0	2	2	5	5	5	43	2
Middle Atlantic.....	6	7	9	11	4	6	8	7	16	5
East North Central.....	4	5	5	7	6	8	3	5	6	10
West North Central.....	6	6	3	0	6	12	6	21	6	15
South Atlantic.....	12	24	6	10	6	20	12	24	12	20
East South Central.....	25	13	13	26	38	13	25	26	6	82
West South Central.....	10	36	17	14	7	34	7	11	17	23
Mountain.....	17	62	26	26	9	18	35	9	18	18
Pacific.....	5	7	7	7	19	2	14	7	14	10

## PNEUMONIA DEATH RATES

91 cities .....	101	116	86	100	89	99	98	106	106	111
New England.....	84	126	90	77	91	73	67	119	111	116
Middle Atlantic.....	116	133	98	118	95	101	108	104	115	127
East North Central.....	70	82	52	78	56	77	66	86	63	69
West North Central.....	115	138	106	93	88	132	112	150	103	96
South Atlantic.....	152	166	122	180	146	154	140	134	142	138
East South Central.....	183	175	107	136	95	155	113	123	120	110
West South Central.....	79	114	66	153	135	128	104	162	142	135
Mountain.....	174	167	122	229	122	132	87	159	199	220
Pacific.....	50	50	74	70	77	60	130	60	123	127

<sup>1</sup> Shreveport, La., not included.

<sup>2</sup> Bridgeport, Conn., Buffalo, N. Y., and Boise, Idaho, not included.

<sup>3</sup> Bridgeport, Conn., not included.

<sup>4</sup> Buffalo, N. Y., not included.

<sup>5</sup> Boise, Idaho, not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended December 12, 1931.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 12, 1931, as follows:

Province	Cerebro-spinal meningitis	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup> .....					
Nova Scotia.....		1			
New Brunswick.....					9
Quebec.....			11		12
Ontario.....	2	4		1	8
Manitoba.....	1				2
Saskatchewan.....				8	1
Alberta.....		1			
British Columbia.....					1
Total.....	3	6	11	9	33

<sup>1</sup> No case of any disease included in the table was reported during the week

*Quebec Province—Communicable diseases—Week ended December 12, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 12, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	122	Ophthalmia neonatorum.....	1
Diphtheria.....	66	Poliomyelitis.....	11
Erysipelas.....	3	Scarlet fever.....	74
German measles.....	4	Tuberculosis.....	41
Measles.....	184	Typhoid fever.....	12
Mumps.....	32	Whooping cough.....	37

### CUBA

*Habana—Communicable diseases—Four weeks ended December 5, 1931.*—During the four weeks ended December 5, 1931, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	1		Scarlet fever.....	8	
Diphtheria.....	20	6	Tuberculosis.....	41	4
Malaria <sup>1</sup> .....	19	1	Typhoid fever <sup>1</sup> .....	10	3
Measles.....	28				

<sup>1</sup> Many of these cases are from the island outside of Habana.

## PORTO RICO

*San Juan—Communicable diseases—Four weeks ended December 5, 1931.*—During the four weeks ended December 5, 1931, cases of certain communicable diseases were reported in San Juan, P. R., as follows:

Disease	Cases	Disease	Cases
Diphtheria.....	7	Mumps.....	6
Filariasis.....	2	Pellagra.....	1
Influenza.....	3	Polioomyelitis.....	1
Malaria.....	67	Typhoid fever.....	1
Measles.....	83	Whooping cough.....	20

## YUGOSLAVIA

*Communicable diseases—November, 1931.*—During the month of November, 1931, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	51	9	Polioomyelitis.....	3	-----
Cerebrospinal meningitis.....	2	2	Scarlet fever.....	856	73
Diphtheria.....	1,240	164	Sepsis.....	7	4
Dysentery.....	67	17	Tetanus.....	24	13
Erysipelas.....	241	11	Typhoid fever.....	426	51
Measles.....	865	7	Typhus fever.....	2	1
Paratyphoid fever.....	6	-----			

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases, D, deaths; P, present]

Place	June 28-30, 1931	July 1-3, 1931	Aug. 23-25, 1931	Week ended—											
				Sept. 1931			October, 1931			November, 1931			December, 1931		
				3	10	17	24	31	7	14	21	28	5	12	19
Ceylon: Colombo.....	C	3													
D		3													
China:															
Canton.....	C		2												
Hankow.....	C														
D															
Shanghai.....	C	7	12	8	17	17	5	18			6				
D			9	29			4				4				
Swatow.....	C	7													
D															
India:															
Bombay.....	C	22,074	30,517	29,221	2,572	10,172	4,556	4,495	4,237						
D		12,093	20,278	21,123	3,711	4,578	2,470	2,250	2,232						
C		22	44	12	1	1	2								
Calcutta.....	C	26	23	12	1	1	4								
D		267	110	46	18	23	5								
Chittagong.....	C	155	30	15	6	12									
D															
Kerikal.....	C	1	2	1											
D															
Madras.....	C	4	6	5											
Moulmein.....	C	1													
Neapattam.....	C	1													
Rangoon.....	C	4	1	1	1										
D															
India (French):															
Chanderuagor.....	C	5	7	2	1										
D		3	3	4											
Pondicherry.....	C	3	3	2	1										
D		2	2	34											
India (Portuguese):															
D		1	18		17	19	39	18							
					10	4	12	8							







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE

[C indicates cases; D, deaths; P, present]

Place	June 23— July 25, 1931	July 28— Aug. 22, 1931	Aug. 23— Sept. 10, 1931	Week ended—												
				October, 1931						November, 1931			December, 1931			
				3	10	17	24	31	7	14	21	28	5	12	19	
Algeria:																
Algiers.....		2														
Philippeville.....	1	2														
Argentina: San Juan Province.....	P	1														
British East Africa (see also table below):																
Tanganyika.....	6	8	4	8	2	3										
Uganda.....	6	2	4	4												
Uganda:.....	418	285	289	83	62	67	64	71								
Ceylon: Colombo.....	400	231	207	82	63	67	58	69								
Ceylon:.....	1	6	3	1	1	2										
Plague-infected rats.....	1	3	1	1	1											
Chile: Santiago.....	8	8												1		
China:.....						1										
Shansi Province <sup>1</sup> .....						1										
Shensi Province.....									P							
Dutch East Indies:									P							
Batavia and West Java.....																
Java and Madura.....	75	53	65	21	31	20	28	34	38	39						
Ecuador (see table below).	75	58	65	21	31	20	28	34	38	39						
Egypt:	212	203	233	77	63	85	94	97	133	132						
Alexandria.....																
Assiout.....	13	9	5	1			1	1	3	1		1	1	1		
Beheira.....	5	3	2						1	1		1	1	1		
Dakahlia.....																
Girga.....			2													
Kena.....	1	2														
Minieh.....	1															
Port Said.....	12															
Port Said.....	4	2														
Port Said.....	5															
Port Said.....	1															



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	June, 1931	July, 1931	Aug., 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	Place	June, 1931	July, 1931	Aug., 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931
British East Africa (see also table above):							Madagascar—Continued.						
Kenya.....	154	484	235	14	64	—	Moramanga Province.....	C	1	3	12	6	—
Ecuador.....	—	—	—	—	—	—	Tananarive Province.....	D	—	3	11	4	—
Alamora Parish—Los Hoyos.....	C	—	—	1	3	—	Peru.....	D	10	45	65	63	—
Amaluza Parish—Cangochapa.....	C	—	—	—	2	—	Callao—Plague-infected rats.....	D	9	44	63	62	—
Calusa Canton—	—	—	—	4	1	—	Senegal:	D	5	19	2	—	—
Carlananga.....	C	—	—	—	—	—	Baol <sup>1</sup> .....	C	1	1	—	—	—
Ovelaria.....	C	1	—	—	—	—	Dakar <sup>1</sup> .....	C	27	101	13	6	2
Calica Canton—Chorras.....	C	—	—	—	1	—	Diourbel <sup>1</sup> .....	C	13	88	8	—	—
Loja Canton—	C	—	—	20	—	—	Louga <sup>1</sup> .....	C	64	194	45	4	—
Lapas.....	C	—	—	—	—	—	Rufisque <sup>1</sup> .....	D	56	106	13	—	10
Naimuro.....	C	—	—	—	—	—	Thies <sup>1</sup> .....	C	4	2	10	5	6
Peterillo.....	C	1	—	—	1	—	Tivaouane <sup>1</sup> .....	C	2	1	4	—	1
Tuburo.....	C	—	—	—	1	—			2	1	1	2	10
Pales Canton—San Antonio.....	C	2	—	—	—	—			34	2	—	—	12
Indo-China.....	D	—	—	—	—	—			12	20	12	7	10
Madagascar (see also table above):									16	16	8	5	7
Amboitra Province.....	C	15	1	1	1	—			3	3	—	—	—
Antistrabe Province.....	C	12	13	10	10	—			2	2	—	—	—
Miarinarivo Province.....	C	12	22	19	10	—			2	2	—	—	—
	C	8	20	14	4	—			—	—	—	—	—
	D	7	19	12	4	—			—	—	—	—	—

<sup>1</sup> Reports incomplete.

## SMALLPOX

Place	Week ended—																
	May 31— June 27, 1931	June 28— July 25, 1931	July 26— Aug. 22, 1931	Aug. 23— Sept. 19, 1931	October, 1931					November, 1931			December, 1931				
					Sent. 28, 1931	3	10	17	24	31	7	14	21	28	5	12	19
Algeria:																	
Algiers.....	8	1		1								1					
Constantine.....		1															
Belgian Congo.....	42																
Brazil: Porto Alegre (alastrim).....	5	41	34	48	12	18	16	7	24	3	23						
British East Africa: Tanganyika.....	7	149	19	50	8	2	1, 121	53	18								
British East Africa: Tanganyika.....		17		5	4		91	2	2								
British South Africa:																	
Northern Rhodesia.....	1	21	26	3			1										
Southern Rhodesia.....		2															
Canada:																	
Alberta.....		1	1		12			1	2	2	1			2	1		
British Columbia.....		2	5	2						1	1		1				
Manitoba.....	4			1													
Winnipeg.....				1													
Nova Scotia.....																	
Ontario.....	32	35	5	6	5	2	1	9	7	3	5	3	2	5	1		
Kingston.....																	
Ottawa.....	1				1			1	4	3	5						
Toronto.....	1				1	5	2										
Quebec.....																	
Saskatchewan.....	54	42	26	3	1	6	3	1	11	3	1	18	12	5	9	8	
Regina.....					1			1									
Chile:		1															
Antofagasta.....																	
Santiago.....									2								
China:									1								
Amoy.....	4	2	1	1	1			1				1	6	2	5	11	28
Canton.....	3	2	1		1				1			1	4	4	4	25	3
Hankow.....		1										1					
Manchuria—Kwantung—Dairen.....	P	P	P	P	P			P				1	P	6	3	2	
Nanking.....	4	3							P	5	4	9	6				
Shanghai.....	1																
Foreigners only.....	11	3		35	59	17	17	1	6	2	12	16	13	20	23		
including natives.....	13	6	1	7	8				1	1	1		6	8	7		
Tientsin.....		3															

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	May 31- June 27, 1931	June 28- July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Week ended—										
					October, 1931					November, 1931					
					Sept. 26, 1931	3	10	17	24	31	7	14	21	28	December, 1931 5 12 19
Chosen (see table below).															
Colombia: Santa Marta.....				1											
Eritrea.....		2		2											
France (see table below).															
Great Britain:															
England and Wales.....	287	187	91	97	45	41	34	41	39	42	71	68	55	56	57
Bradford.....	5														
London.....	122	54	26	32	5	17	15	21	20	27	55	27	38	27	35
London and Great Towns.....	228	152	69	88	35	31	25	37	31	37	66	45	48	48	53
Sheffield.....	1	1		2											
Greece (see table below).															
Honduras:															
Puerto Castilla.....												1			
Tegucigalpa.....															
India:															
Bombay.....	7,413	5,359	2,927	1,705	382	528	258	283	197					8	
Calcutta.....	1,704	1,352	746	433	100	122	47	55	46				1		
Cochin.....	5	6	2	5									1		
Cochin.....	47	21	13	5	1				1				1		
Karachi.....	41	18	9	5	1				1		2		1		
Madras.....	2		3	1	1	1	2	4	3						
Nagapattinam.....	1		1						1					4	
Nagapattinam.....	1	2	1	1	1	5	6	1	2	2		1		2	
Nagapattinam.....	1		2	2			2					1		1	
Nagapattinam.....	3	1	2	4	2	2	1	1	1						
Nagapattinam.....	6	3	4	2	2	2	1	1			1		2	2	
Nagapattinam.....	2	1	2	1									2	2	
Nagapattinam.....	2			2							4			1	
Nagapattinam.....				1		4		1	1					4	
Nagapattinam.....				1		1									
Nagapattinam.....	6	5	5	6	2	2	4	1	1						
Nagapattinam.....	2	1	4	6		1			1						
Nagapattinam.....	2														
Nagapattinam.....	1	3													
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## CHOLERA, PLAQUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	May 31— June 27, 1931	June 28— July 25, 1931	July 26— Aug. 22, 1931	Aug. 23— Sept. 19, 1931	Week ended—										
					Sept. 26, 1931	October, 1931					November, 1931				
						3	10	17	24	31	7	14	21	28	December 1931
Japan.....	1														
Lithuania (see table below).															
Mexico:															
Durango.....		1		1											
Guadalupe.....															
Mexico City, including municipalities in Federal Dis-	46	53	18	10	4	2	5	3	7	3	1	5	7	3	
trict.....	19	12	10	4	2	2	2	2	2	2			1	1	
San Luis Potosi.....		4	1												
Torrón.....		1					1	1	1	3	1				
Tuxtepec.....		1					1	1	1	6					
Moreno.....	101	102	8			1	1	3	1	1					
Palestine.....	6	8													
Paraguay: Asunción.....	5	2				4	1	1	2	1					
Poland.....	97	53	31	11	2	8	3	1	2	6	6	6		36	32
Portugal: Oporto.....	4					1				2				2	
Rumania.....	80	11	23	13	1	6	7	4	12	12	6	5	13		
Tunisia: Tunis.....	13	5	2	1		2	1	3	3	3	2	1	1	26	
Turkey (see table below).	73	2		3										2	
Union of Socialist Soviet Republics (see table below).	4														
Union of South Africa:															
Cape Province.....	P	P	P	P	P	P	P	P	P	P	P	P			
Municipality of East London.....															
Natal.....	1			P	P										
Orange Free State.....	P	P	P	P	P										
Transvaal.....	P	P	P	P	P										
Yugoslavia (see table below).				P	P	P	1	P	P	P	P	P			



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## YELLOW FEVER—Continued

[C indicates cases; D, deaths; P, present]

[illegible]

**UNITED STATES TREASURY DEPARTMENT**

# **PUBLIC HEALTH REPORTS**

**ISSUED WEEKLY**

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PUBLIC HEALTH SERVICE**

**VOLUME 47    ::    NUMBER 3**

**JANUARY 15 - - 1932**

## **===== SPECIAL ARTICLES =====**

**Typhus Transmitted by Crushed Fleas and by Flea Feces  
Sickness Among Male Industrial Employees, 3d Quarter, 1931  
Blood Chemistry Changes in Comparatively Rapid Asphyxia**



**UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932**

## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. O. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

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## TYPHUS FEVER

### TRANSMISSION OF ENDEMIC TYPHUS BY RUBBING EITHER CRUSHED INFECTED FLEAS OR INFECTED FLEA FECES INTO WOUNDS

By R. E. DYER, *Surgeon*, E. T. CEDER and W. G. WORKMAN, *Assistant Surgeons*, and A. RUMREICH and L. F. BADGER, *Passed Assistant Surgeons*, *United States Public Health Service*

Following the isolation of the virus of endemic typhus from rat fleas secured from a typhus focus in Baltimore, in November, 1930 (1), investigations were inaugurated to determine the method by which the flea (*Xenopsylla cheopis*) might transmit endemic typhus from rat to rat and from rat to man.

In our investigation on the possible mechanism by which the flea could transmit the infection it was found that fleas (*Xenopsylla cheopis*) were readily infected with the virus of endemic typhus by allowing them to feed on infected white rats. Further, it was found that these fleas were able to transmit endemic typhus from rat to rat under conditions similar to those occurring in nature (2) (3) (4). This work was, in part, confirmed by Castaneda (5), working independently, who was able to show that fleas (*Xenopsylla cheopis* and *Ctenocephalus canis*) could be infected with Mexican typhus by allowing them to feed on infected rats. It was later determined by us that endemic typhus could be transmitted to guinea pigs by rubbing crushed infected fleas into wounds made by scratching and that the virus was present in the feces of infected fleas (6). These facts apparently warranted the assumption that a probable mechanism by which endemic typhus may be transmitted is through the rubbing of infected flea feces into wounds made by the biting of fleas or by scratching. Recently we reported that fleas infected with endemic typhus retained the infection for at least 36 days (6). We are now able to report that this period can be lengthened to at least 52 days. Since a rat infected with typhus presumably remains infectious for arthropods for only a relatively short time and the fleas apparently retain their infection throughout life, the importance of the flea in perpetuating the virus in nature is apparent. The period of gestation in the rat being between three and four weeks (7), ample opportunity

is afforded infected fleas for the transmission of endemic typhus virus to a succeeding generation of rats, from which other fleas may, in their turn, receive infection.

The experimental data bearing on the transmission of endemic typhus by the rubbing of crushed infected fleas (*Xenopsylla cheopis*) and on the transmission by rubbing feces of infected fleas into skin abrasions are reported in this paper.

#### TRANSMISSION BY CRUSHED WHOLE FLEAS

Fleas which had been fed on rats infected with endemic typhus virus were crushed in a mortar. This material was rubbed on the shaved belly of two guinea pigs. A stiff wire, sharpened at one end, was then used to make scratches in the skin where the crushed fleas had been deposited. Collars were fitted to the guinea pigs to prevent their licking off the material from the crushed fleas. One of the guinea pigs so treated developed an indefinite febrile reaction, while the second developed a febrile reaction after an incubation period of nine days. No evidence of scrotal involvement occurred in either guinea pig. Assuming that typhus transmitted through abrasions might give an atypical type of infection, these guinea pigs were sacrificed on the eleventh day after the application of crushed fleas. The spleens and brains from these guinea pigs were then emulsified separately and separately injected, intraperitoneally, into fresh guinea pigs, two animals receiving the material from each organ. Typical clinical endemic typhus developed in five of the eight guinea pigs so inoculated. This strain of virus was established as endemic typhus by a further study in guinea pigs and rabbits. With few exceptions, blood cultures made at the time of transfer of virus from infected guinea pigs to fresh animals were negative. Typical clinical endemic typhus developed in the majority of the guinea pigs used. Rickettsiae were found readily in smears made from the tunica vaginalis of infected guinea pigs. The characteristic histologic lesions of typhus were found in three of the four brains from guinea pigs infected with this strain of virus. Two rabbits injected with the virus developed agglutinins for *B. proteus* X<sub>19</sub> (type O) in dilutions of 1:80, while the serum of a third rabbit showed a titer of 1:640. A definite cross immunity was found between this strain of virus and known strains of endemic typhus virus.

#### TRANSMISSION BY FECES OF INFECTED FLEAS

Two guinea pigs were fitted with collars to prevent their reaching the abdomen with their mouths. Feces from fleas infected with endemic typhus were collected by imprisoning the fleas in a test tube overnight. The feces were then rubbed and scratched into the shaved abdomens of the two guinea pigs. One of these guinea pigs developed an indefinite febrile reaction, while the temperature of the second

remained normal for 13 days. Neither guinea pig showed any scrotal involvement at the end of 13 days. These two guinea pigs were sacrificed and their brains and spleens used to inoculate fresh guinea pigs.

Of the eight guinea pigs inoculated with this material, five developed the febrile reaction and scrotal lesions typical of endemic typhus, and the strain was established by transfer of blood and testicular washings to other guinea pigs. Rickettsiae have been found readily in smears made from the tunica vaginalis from guinea pigs inoculated with this strain of virus. Brains from two guinea pigs infected with this strain of virus were examined histologically. The characteristic lesions of typhus were found in one of these. In rabbits, this virus produces agglutinins for *B. proteus* X<sub>19</sub>. Guinea pigs immune to typhus are immune to this virus.

#### SUMMARY

Fleas (*Xenopsylla cheopis*) infected with endemic typhus by feeding on infected rats were crushed and rubbed into scratches on the skin of guinea pigs. These guinea pigs showed an indefinite febrile reaction but no scrotal lesions. The virus of endemic typhus was recovered from them.

Feces of infected fleas scratched into the skin of guinea pigs transmitted endemic typhus. In this instance these guinea pigs suffered atypical infections (signs of infection being absent in one), but the virus of the disease was recovered readily from their brains and spleens.

#### CONCLUSION

The foregoing work adds additional weight to the suggestion previously made (6) that a probable mechanism by which endemic typhus may be transmitted is through the rubbing of infected flea feces into wounds made by the biting of the flea or by scratching.

#### ACKNOWLEDGMENT

For histologic examinations of brain sections we are indebted to Passed Asst. Surg. R. D. Lillie.

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- (5) Castaneda, M. R.: Medicina, **11**:695 (Aug. 10), 1931.
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- (7) Miller, N.: American Naturalist, **45**:623 (Oct.), 1911.

## SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES IN THE THIRD QUARTER OF 1931

By DEAN K. BRUNDAGE, *Statistician, Office of Industrial Hygiene and Sanitation,  
United States Public Health Service*

The frequency of sickness causing disability for more than one week was 2 per cent lower in the third quarter of 1931 than in the same quarter of 1930, and 15 per cent below the incidence rate for the corresponding period of 1929. The frequency of nonindustrial injuries, however, was somewhat higher during the recent quarter-year than in the same period of either of the two preceding years, presumably on account of the longer time to which men are exposed to accidents outside the factory, as they spend fewer hours in it.

For respiratory diseases as a group the decrease was 8 per cent from the 1930 to the 1931 period, and 25 per cent from 1929 to 1930. Yet each of the three periods under review is regarded as epidemic-free.

Among the respiratory diseases, pneumonia (all forms) exhibited the most spectacular decrease, the rate for the third quarter of 1931 being less than half of what it was in the same period of 1929. Influenza was reported at a slightly lower rate during the recent quarter than in the third quarter of 1930, but at a much lower rate than in the corresponding quarter of 1929. Bronchitis, tonsillitis, and other diseases of the pharynx and tonsils show a decrease in frequency of about 10 per cent from the 1930 to the 1931 period and approximately 20 per cent from the 1929 to the 1930 quarter-year under consideration. The rate of new cases of respiratory tuberculosis appears to be about the same as in 1930, but lower than in 1929.

Nonrespiratory diseases as a whole occurred at virtually the same rate in the third quarter of 1931 as in the third quarter of 1930. The latter rate, however, was 7 per cent below that of the third quarter of 1929.

In the nonrespiratory group, certain disease categories have shown consistent improvement up to the end of the third quarter in 1931 over the corresponding rates in 1930 and 1929. These diseases or disease groups are appendicitis, diseases of the skin, rheumatism, and "other digestive diseases," which include, principally, diseases of the mouth and annexa, the intestines, and the liver. For diseases of the stomach, and diarrhea and enteritis (considered as one group), the rates exhibit evidence of a declining trend, but the improvement has not been as consistent as in the other disease groups mentioned.

In addition to nonindustrial injuries, at least two disease groups appear to be resisting the declining trend of sickness. In each of the last two quarters<sup>1</sup> the incidence rate of neurasthenia, and of "other

<sup>1</sup> Cf. *Sickness among male industrial employees in the second quarter of 1931*. Pub. Health Rep., vol. 44, No. 42, Oct. 16, 1931.

genito-urinary diseases" has been slightly higher than during the corresponding periods of the two preceding years. In 1921, when economic conditions were similar to those prevailing now, especially as regards the insecurity of jobs, the neurasthenia rate ascended. The present frequency of this type of illness, however, may not be significantly above the 1929 incidence. The genito-urinary diseases, which have failed to decline in conformance with the general run of diseases, were found, upon special analysis of this category, to be diseases of the kidneys and annexa (except nephritis) and diseases of the bladder.

The statistics presented are based on reports to the Public Health Service of cases of sickness and nonindustrial injury causing disability for more than one week and which were compensated by cash benefits from the funds of industrial sick-benefit associations or company relief departments. The rates in 1930 and 1931 are based on reports from the same establishments, 26 in all, while the 1929 rates cover 23 of these 26 establishments. The average number of men included in the record was approximately 149,000 in 1931, 160,000 in 1930, and 164,000 in 1929.

The record covers, in the main, men who are employed, but involves those working on a part-time basis. Some unemployed men evidently are included, because the by-laws of about one-third of the reporting associations contributing one-seventh of the population under consideration state that membership may be retained during furlough or lay-off if dues are paid. In one other association membership may be retained up to the ninetieth day of furlough, and in another association up to the one hundred and eightieth day. But in 60 per cent of the reporting associations, involving 83 per cent of the number of men under consideration, membership is terminated within three weeks of the date of lay-off.

The frequency of disabling attacks of sickness lasting eight days or longer may not actually have decreased quite as much as the accompanying table indicates. The factor of selection of personnel during the last two years may have changed somewhat the character of the population under consideration. For example, the group laid off may have contained a larger proportion of potential sickness risks than the group which remained on the pay roll. However, the kinds of sickness showing the sharpest decreases in frequency indicate that factors other than mere "selection" have contributed to the indicated decline in the incidence of illness.

**TABLE 1.**—*Frequency of disability lasting 8 calendar days or longer in the third quarter of 1931 compared with the same quarter of 1930 and 1929*Male morbidity experience of 26 industrial establishments which reported their cases to the United States Public Health Service during all three years <sup>1</sup>

Diseases and disease groups which caused disability [Numbers in parentheses are disease title numbers from the International List of Causes of Death, third revision, Paris, 1920]	Annual number of disabilities per 1,000 men in third quarter of—		
	1931	1930	1929
Sickness and nonindustrial injuries <sup>2</sup> .....	78.2	78.0	88.8
Nonindustrial injuries.....	14.3	12.5	13.6
Sickness <sup>3</sup> .....	63.9	65.5	75.2
Respiratory diseases.....	16.5	18.0	24.0
Influenza and grippé (11).....	4.1	4.4	6.7
Bronchitis, acute and chronic (99).....	2.5	2.8	3.6
Pneumonia, all forms (100, 101).....	.7	1.2	1.5
Diseases of the pharynx and tonsils (109).....	4.3	4.8	6.0
Tuberculosis of the respiratory system (31).....	1.0	.9	1.3
Other respiratory diseases (97, 98, 102-107).....	3.9	3.9	4.9
Nonrespiratory diseases.....	47.4	47.5	51.2
Diseases of the stomach—cancer excepted (111, 112).....	4.8	4.8	4.7
Diarrhea and enteritis (114).....	2.0	1.9	2.3
Appendicitis (117).....	3.5	3.7	4.8
Hernia (118a).....	1.7	1.5	1.8
Other digestive diseases (108, 110, 115, 116, 118b-127).....	2.8	2.9	3.7
Rheumatic group, total.....	9.9	10.0	10.3
Rheumatism, acute and chronic (51, 52).....	4.1	4.5	4.6
Diseases of the organs of locomotion (158).....	3.5	3.1	3.5
Neuralgia, neuritis, sciatica (82).....	2.3	2.4	2.2
Neurasthenia (part of 84).....	1.5	1.2	1.4
Other diseases of the nervous system (70-81, 83, part of 84).....	.9	1.2	1.3
Diseases of the heart and arteries, and nephritis (87-92, 96, 128, 129).....	2.7	2.8	3.5
Other genito-urinary diseases (130-136).....	2.6	2.3	2.1
Diseases of the skin (151-154).....	3.7	4.4	4.6
Epidemic and endemic diseases except influenza (1-10, 12-25).....	1.3	1.4	1.2
Ill-defined and unknown causes (205).....	2.6	2.3	1.9
All other diseases <sup>4</sup> (26-30, 32-37, 41-50, 53-69, 85, 86, 93-95, 155-157, 159, 164).....	7.4	7.1	7.6
Average number of males covered in the record.....	148,724	160,115	163,851

<sup>1</sup> Except that the rates for 1929 cover 23 of the 26 establishments included in 1930 and 1931.<sup>2</sup> Exclusive of disability from the venereal diseases.

## STUDIES IN ASPHYXIA

### II. BLOOD CHEMISTRY CHANGES RESULTING FROM COMPARATIVELY RAPID ASPHYXIA BY ATMOSPHERES DEFICIENT IN OXYGEN <sup>1</sup>

By H. H. SCHRENK,<sup>2</sup> F. A. PATTY,<sup>3</sup> and W. P. YANT<sup>4</sup>

#### INTRODUCTION

This report is the second of a series which describes the results of an investigation of the pathological and blood chemistry changes attending partial or complete asphyxia of dogs by carbon monoxide or by atmospheres deficient in oxygen. This study has been conducted for the purpose of obtaining fundamental information on the

<sup>1</sup> Published by permission of the Director, U. S. Bureau of Mines. Submitted for publication May 5, 1931.<sup>2</sup> Chemist in charge, toxicological and biochemical laboratory, health laboratory section, Pittsburgh Experiment Station, U. S. Bureau of Mines, Pittsburgh, Pa.<sup>3</sup> Assistant physiological chemist, health laboratory section, Pittsburgh Experiment Station, U. S. Bureau of Mines, Pittsburgh, Pa.<sup>4</sup> Supervising chemist, health laboratory section, Pittsburgh Experiment Station, U. S. Bureau of Mines, Pittsburgh, Pa.; and supervising engineer, Pittsburgh Experiment Station.

response of the organism to asphyxial environment, with the particular viewpoint of devising a procedure for treating moribund cases of carbon monoxide poisoning which do not respond satisfactorily to present methods.

The first report<sup>5</sup> described the neuropathology accompanying fatal carbon monoxide asphyxia produced by conditions which caused death in a comparatively short time, such as 20 to 30 minutes.

The present report deals with the blood chemistry changes in dogs asphyxiated by exposure to atmospheres deficient in oxygen which caused death in less than 30 minutes. This study was made not only to ascertain the changes attending asphyxia by insufficient atmospheric oxygen but also as a parallel to a similar study of the changes attending asphyxia by carbon monoxide, in order to ascertain whether there were changes which were peculiar to each type of asphyxia or whether they were identical and due entirely to anoxemia.

#### SCOPE OF WORK

The scope of the work described in this report is a study of the blood chemistry changes produced in dogs by exposure to atmospheres deficient in oxygen. Only the acute effects as produced by atmospheres which caused death in 30 minutes or less were studied.

#### TEST APPARATUS

The apparatus shown in Figure 1 was used in making the exposures. The two Venturi-type flow meters *a* and *b*, with their respective pressure regulators *x* and *y*, were designed to deliver an atmosphere, the

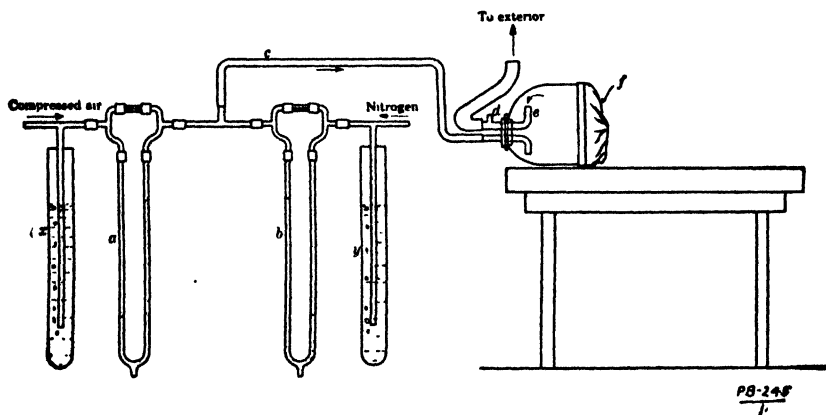


FIGURE 1.—Apparatus for exposing dogs to atmospheres deficient in oxygen

oxygen content of which could be varied from no oxygen to that of normal air, while the rate of flow was maintained at 16 liters per

<sup>5</sup> Chornyak, John, and Sayers, R. R.: Studies in asphyxia: I. Neuropathology resulting from comparatively rapid carbon monoxide asphyxia. Pub. Health Rep., vol. 46, No. 26, June 26, 1931. (Reprint No. 1488.)



minute. Air was passed through flow meter *a* and nitrogen through flow meter *b*, the effluent gases from each being led by tube *c* to an exposure mask. The mask consisted of a 14-liter bell jar the large opening of which was closed with a collarlike diaphragm *f* of rubberized cloth. The opening in the diaphragm was gathered with a hem containing elastic around the edge. This fit the neck of the animal snugly forming an almost air-tight seal. The small end of the bell jar was fitted with a 2-hole rubber stopper equipped with glass tubes which permitted the gas to enter and escape from the mask. The exit *e* was provided with a small side tube *d* which permitted sampling the escaping gas.

#### METHOD OF ANALYSIS OF ATMOSPHERES

The composition of the atmosphere was regulated by means of the flow meters *a* and *b* in accordance with a calibration for each. Frequent analysis of the atmosphere from the mask was made by the Haldane volumetric method.<sup>6</sup> These verified the values computed from flow-meter calibrations.

#### TEST PROCEDURE

With normal air flowing through the mask the animal was secured to a holding board and its head placed in the mask. The oxygen content of the atmosphere in the mask was then diminished by manipulation of the pressure regulators. The concentration of oxygen was rapidly decreased at first and then decreased at a progressively slower rate, the procedure being that which was calculated from the oxygen dissociation curve of dogs' blood to produce a degree of anoxemia which simulated throughout the exposure the conditions which would result from continuous exposure of the animal to air which contained 0.6 per cent carbon monoxide by volume. Table 1 is a typical log of the experimental conditions used in making the exposures. Column 1 gives the time a particular condition was in effect; column 2 gives the oxygen content of the atmosphere as computed from the flow-meter calibrations; and column 3 shows the oxygen content as determined by the Haldane method of analysis. In planning this schedule, consideration was given to the fact that the oxygen tensions in the alveolar spaces would be lower than in the inspired air. The schedule as given caused death in 11 to 28.5 minutes. The dissociation curve for dogs' blood at 40 mm. partial pressure carbon dioxide and varying partial pressures of oxygen was found to be very similar to that found by Haldane<sup>7</sup> for human blood,

<sup>6</sup> Burrell, G. A., and Seibert, F. M.: Sampling and examination of mine gases and natural gas. Bulletin 197 (1926), 108 pp. (Revised by G. W. Jones.)

<sup>7</sup> Douglas, C. G., Haldane, J. S., and Haldane, J. B. S.: The laws of combination of hemoglobin with carbon monoxide and oxygen. Jour. of Physiology, 44: (1912) 275-304.

though the saturation values for the dog blood were slightly higher. More data would be necessary definitely to establish this point, but for the purpose of the experiments at hand the data obtained were satisfactory for controlling the experimental conditions to give the desired degree of asphyxia.

TABLE 1.—*Experimental conditions*

Duration		Oxygen content of atmosphere	
		From flow-meter calibration	By analysis
Min.	Sec.	Per cent	Per cent
0	25	8	-----
0	50	5.4	-----
1	20	4.1	-----
2	10	3.4	-----
3	15	2.9	-----
4	50	2.5	2.97
7	0	2.2	-----
10	25	2.2	2.33
13	30	1.97	-----
15	30	1.97	2.26

As will be discussed later, the saturation of the blood with oxygen was always determined by blood-gas methods at the beginning of each experiment and again just prior to death; also, at an intermediate period in two experiments.

A constant flow of 16 liters per minute of the test atmosphere was maintained through the mask. This was found to be adequate for respiration requirements, as shown by the fact that the oxygen content of the effluent gas agreed closely with the computed values and the carbon dioxide content was usually about 0.5 per cent and was always below 1 per cent.

#### METHOD OF TAKING BLOOD SAMPLES

The blood samples were obtained from either the femoral vein or artery by means of a syringe and transferred to tubes containing potassium oxalate, or lithium oxalate when the determinations included uric acid. Arterial blood was used for hydrogen ion and blood gases, and venous blood for the other determinations. The sample used to determine the hydrogen ion concentration and blood gases was taken under neutral mineral oil and transferred to a Pyrex tube containing oil, so that the blood was at no time exposed to the air. A normal sample was taken just before the exposure was started and a second sample was obtained just prior to death, except in a few instances when an intermediate sample was also obtained. The amount of the blood taken for each sample was 25 c. c.

## METHODS OF ANALYSIS

The blood samples were examined for the hydrogen ion concentration, blood gases (oxygen and carbon dioxide), carbon dioxide capacity of the plasma, sugar, uric acid, urea, nonprotein nitrogen, total and preformed creatinine, and inorganic phosphorus. Blood counts (including hemoglobin), red blood cells, white blood cells, and differential counts were also made.

The Folin-Wu method<sup>8</sup> of preparing the protein-free filtrate was followed. The filtrate was used to determine sugar, uric acid, urea, nonprotein nitrogen, total and preformed creatinine. With the exception of uric acid, which was determined by Benedict's method,<sup>9</sup> the substances were determined according to the methods given by Folin.<sup>10</sup>

The hydrogen ion concentration of the blood was determined electrometrically by use of a saturated calomel cell, a hydrogen electrode, and a Leeds and Northrup type K potentiometer with a sensitive galvanometer. The electrode was a modification of Hildebrand's, having a miniature hydrogen bell with an elongated narrow tube permitting the use of a 16-millimeter electrode vessel, and about 3 c. c. of blood. The electrode vessel was fitted with a 3-hole rubber stopper to accommodate the electrode, the bridge, and the hydrogen exit. The vessel was suspended in a water bath maintained at 37.5° C. The platinum electrode, 4 mm. square foil, was electroplated in a 1 per cent solution of palladium chloride and then placed in 10 per cent sulphuric acid and the current was continued for a short time to saturate the electrode with hydrogen. The E. M. F. of the electrode and the calomel cell was compared to a certified Weston standard cell and checked against a standard buffer. Saturated KCl served as a bridge. Diffusion of the KCl was prevented by a small cotton plug at the capillary tip of the bridge dipping into the electrode vessel. A 7 per cent carbon dioxide, 93 per cent hydrogen mixture, instead of the usual pure hydrogen, was passed through the blood in the electrode vessel in order to prevent a drift of the potential due to the removal of carbon dioxide. This composition approaches the partial pressure of carbon dioxide in normal venous blood, which was used in subsequent experiments. However, arterial blood was used for the determination of the hydrogen ion concentration in this study in order to reduce the number of blood samples taken. This curtailment of samples was necessitated by the short period of time available for obtaining the blood, as an attempt was made to take the samples as near to death as possible and yet before cessation of circulation. The same hydrogen-carbon dioxide mixture was used for arterial blood in order to eliminate differences due to the carbon dioxide ten-

<sup>8</sup> Folin, O., and Wu, H.: A system of blood analysis. *Jour. Biol. Chem.*, **36** (1919), pp. 81-110.

<sup>9</sup> Benedict, S. R.: The determination of uric acid in blood. *Jour. Biol. Chem.*, **61** (1922), pp. 187-207.

<sup>10</sup> Folin, O.: *Laboratory Manual of Biological Chemistry*. D. Appleton Co., New York City (1923).

sion, and give results comparable with those obtained in which venous blood was used. Commercial hydrogen and carbon dioxide were found to be sufficiently pure and required no treatment except saturation with water vapor.

The blood gases were determined in a Van Slyke apparatus of the closed manometer type,<sup>11</sup> using 1 c. c. of blood under oil. The blood sample for a determination of the carbon dioxide capacity of the plasma was centrifuged immediately after withdrawal from the animal. Saturation with carbon dioxide was accomplished by bubbling a slow stream of 5 per cent carbon dioxide air mixture (saturated with water vapor) through the plasma for a period of five minutes.

Inorganic phosphorus was determined according to the Bell-Doisy-Briggs method.<sup>12 13 14</sup> The blood for this determination was also centrifuged immediately after withdrawal from the animal.

Hemoglobin was computed from the oxygen content of the arterial blood, as determined by the Van Slyke manometric method. The calculations were made on the basis that 100 per cent hemoglobin is equivalent to 23.3 c. c. of oxygen per 100 c. c. of blood, and that the saturation of arterial blood is 96 per cent. The value 23.3 was that found for dog blood which produced a 100 per cent reading on the Sahli hemoglobinometer scale. Hemoglobin determinations made at the end of the exposure were performed by saturating the blood with carbon monoxide and determining the carbon monoxide capacity. As in the case with oxygen the hemoglobin was calculated to a normal scale on the basis that 23.3 c. c. carbon monoxide per 100 c. c. of blood was equivalent to 100 per cent.

#### RESULTS OF INVESTIGATION

The results of the investigation are given in Tables 2 and 3 and discussed in the following text.

Control experiments which were performed under identical technique, except that the dogs breathed normal air, were observed for a period of 15 hours. Briefly, the results of these control experiments show no significant changes in the blood chemistry and support the conclusion that the changes found in the animals exposed to atmospheres deficient in oxygen were not significantly influenced by experimental technique other than oxygen depletion. The details of the control experiments will be subsequently reported in connection with other work.

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<sup>11</sup> Van Slyke, D. D., and Neill, J. M.: The determination of gases in blood and other solutions by vacuum extraction and manometric measurements. *J. Biol. Chem.*, 61 (1924) pp. 523-584.

<sup>12</sup> Bell, R. D., and Doisy, E. A.: Rapid colorimetric methods for the determination of phosphorus in urine and blood. *Jour. Biol. Chem.*, 44 (1920), pp. 55-67.

<sup>13</sup> Briggs, A. P.: A Modification of the Bell-Doisy phosphate method. *Jour. Biol. Chem.*, 53 (1922), pp. 13-16.

<sup>14</sup> Briggs, A. P.: Some applications of the colorimetric phosphate method. *Jour. Biol. Chem.*, 50 (1924), pp. 255-264.

No determinations were made of the blood volume. It is hardly possible that changes of the magnitude of those found for sugar, uric acid, carbon dioxide capacity of the plasma, carbon dioxide in the blood, oxygen in the blood, and pH would be caused by blood volume changes in the short period of exposure. Total and preformed creatinine changes are within experimental error and need not be considered. The changes in urea and nonprotein nitrogen are not great, being in the neighborhood of 10 per cent or less for the majority of tests. These changes may be due to a decrease in blood volume. It is doubtful whether blood volume determinations would be of much value to explain these changes, since there is at least a 5 per cent error, and possibly 10 per cent, in such work, especially under the conditions of our experiments where the circulation is undoubtedly impaired just prior to death.

TABLE 2.—Blood chemistry of dogs exposed to atmospheres deficient in oxygen

Dog No.	Duration of exposure before death		Sugar *			Urea *		
			Normal	At death	Change	Normal	At death	Change
	<i>Minutes</i>	<i>Seconds</i>						
39	28	35	96.7	254.2	+157.5	21.2	27.2	+6.0
40	11	4	108.7	147.3	+38.6	29.1	30.6	+1.5
41	21	-----	149.7	570.5	+420.8	32.4	32.9	+ .5
42	14	40	87.2	166.5	+79.3	32.2	36.0	+3.8
			Uric acid *			Nonprotein nitrogen *		
39	28	35	.69	3.4	+2.7	29.8	39.3	+9.5
40	11	4	.70	3.6	+2.9	33.3	37.2	+3.9
41	21	-----	.70	4.7	+4.0	42.5	42.9	+ .4
42	14	40	.64	4.0	+3.4	44.1	49.8	+5.7
			Total creatinine *			Preformed creatinine *		
39	28	35	3.9	3.7	-0.2	1.2	1.2	0.0
40	11	4	4.1	4.0	- .1	1.2	1.3	+ .1
41	21	-----	3.1	3.3	+ .2	1.1	1.2	+ .1
42	14	40	3.0	3.8	+ .8	1.2	1.3	+ .1

Dog No.	Duration of exposure before death		Inorganic phosphorus in plasma *		
			Normal	At death	Change
	<i>Minutes</i>	<i>Seconds</i>			
39	28	35	5.3	6.5	+1.2
40	11	4	5.2	5.3	+ .1
41	21	-----	4.1	5.6	+1.5
42	14	40	24.8	25.2	+ .4

\* Results are expressed in milligrams per 100 c. c. of blood.

† Results are expressed in milligrams per 100 c. c. of plasma.

TABLE 2.—*Blood chemistry of dogs exposed to atmospheres deficient in oxygen—*  
Continued

Dog No.	Duration of exposure before death		Oxygen in blood, per cent *			
			Normal	Intermediate	At death	Change
	Minutes	Seconds				
39-----	28	35	23.42	* 3.45	0.72	-22.70
40-----	11	4	20.00		1.69	-18.31
41-----	21		22.70	* 2.97	.85	-21.85
42-----	14	40	21.92		.81	-21.61
Carbon dioxide in blood, per cent †						
39-----	28	35	39.10	* 21.34	16.90	-22.20
40-----	11	4	45.10		26.01	-19.09
41-----	21		42.66	* 20.61	9.77	-32.79
42-----	14	40	35.11		25.46	-9.65

Dog No.	Duration of exposure before death		Carbon dioxide capacity of plasma, per cent †		
			Normal	At death	Change
	Minutes	Seconds			
39-----	28	35	45	19	-26
40-----	11	4	53	36	-17
41-----	21		47	16	-81
42-----	14	40	40.5	28.5	-12

Dog No.	Duration of exposure before death		Hydrogen-ion concentration expressed as pH			
			Normal	Intermediate	At death	Change
	Minutes	Seconds				
39-----	28	35	7.15	* 7.09	6.98	-0.17
40-----	11	4	7.22		7.20	-.02
41-----	21		7.21	* 7.05	6.88	-.33
42-----	14	40	7.16		7.06	-.10

\* Cubic centimeters gas in 100 cubic centimeters of blood.

† Taken after 15 minutes' exposure

\* Taken after 13 minutes' exposure

† Cubic centimeters gas in 100 cubic centimeters of blood or plasma.

TABLE 3.—*Hemoglobin content and cell counts of the blood of dogs exposed to atmospheres deficient in oxygen*

	Dog No. 39		Dog No. 40		Dog No. 41		Dog No. 42	
	Normal*	At death†	Normal*	At death†	Normal*	At death†	Normal*	At death†
Hemoglobin-----	105	(°)	89	90	101	100	98	(°)
Red blood cells-----	7,040,000	7,030,000	8,300,000	(°)	6,280,000	5,730,000	6,190,000	7,380,000
White blood cells-----	8,450	13,100	11,550	(°)	11,700	16,500	13,900	15,400
Polymorphonuclears-----	31	52	71	(°)	59	67	71	80
Lymphocytes-----	61	39	25	(°)	40	29	28	17
Lymphoblasts-----	4	8	(°)	(°)	(°)	(°)	(°)	(°)
Eosinophils-----	3	2	1	(°)	(°)	1	(°)	(°)
Endothelials-----	1	8	8	(°)	(°)	1	1	8

\* Normal sample taken before exposure.

† Taken just at time of occurrence of death. See Table 2 for duration of exposure before the occurrence of death.

° Not determined.

° Not found in the 300 cells counted for the differential determination.

## BLOOD SUGAR

There was a pronounced hyperglycemia in each animal just prior to death. The normal amount of sugar present ranged from 87.2 to 149.7 mg. per 100 c. c. of blood, while the amount present at death varied from 147.3 to 570.5 mg. per 100 c. c. of blood. The increase in blood sugar ranged from 38.6 mg. to 420.8 mg. per 100 c. c. of blood. There was a general tendency for the increase to parallel the increase in period of exposure. An exception, dog No. 41, showed the greatest change but there was an initial hyperglycemia.

## UREA

The amount of urea present in the blood showed a slight increase in all animals.

## URIC ACID

There was a large increase in the uric acid in the blood of all animals. The increase ranged from 2.7 mg. to 4.0 mg. per 100 c. c. of blood, the greatest change occurring in the dog that had an initial hyperglycemia and greatest increase in blood sugar with exposure.

## NONPROTEIN NITROGEN

The nonprotein nitrogen showed a slight to moderate increase in all animals.

## PREFORMED AND TOTAL CREATININE

There was no significant change from the normal in the amount of preformed creatinine in the blood after exposure. Likewise there was but little change in the total creatinine, with the exception of perhaps dog No. 42, in which a moderate increase was observed.

## INORGANIC PHOSPHORUS

The inorganic phosphorus showed a definite increase ranging from 0.1 to 1.5 mg. per 100 c. c. of plasma, the change increasing with the period of exposure, with dog No. 41 being again an exception.

## HYDROGEN ION CONCENTRATION

In all cases the hydrogen ion concentration showed a definite increase, or, in terms of pH, a decrease. The pH decreased 0.17, 0.02, 0.33, and 0.10, respectively, for dogs numbered 39, 40, 41, and 42, or an average of 0.16 pH. The change, with one exception, increased with the period of exposure. The exception again occurred with dog No. 41.

## CARBON DIOXIDE CAPACITY OF THE PLASMA

There was a marked fall in the carbon dioxide capacity in all the animals. From an average of 46 per cent (or 46 c. c. per 100 c. c. of plasma) the carbon dioxide capacity fell to an average of 25 per cent at death.

## BLOOD GASES

There was a fall of carbon dioxide in the blood which paralleled, in general, the change in carbon dioxide capacity of the plasma. Hemoglobin determinations by the carbon monoxide saturation method for two of the animals at the end of the exposure indicated that there was no significant change in the hemoglobin. Calculating on the basis that normal blood is 96 per cent saturated, the intermediate saturation values for dogs numbered 39 and 41 are 14.1 and 12.6 per cent, respectively; and the saturation at death was 3, 8, 3.6, and 1.3 per cent, respectively, for dogs numbered 39, 40, 41, and 42. Saturation values calculated from the carbon monoxide capacity at death for dogs numbered 40 and 41 were the same as given above.

## BLOOD COUNTS

The blood counts showed no significant change in the red cells, with one exception, in which there was a definite increase; a moderate increase in the total number of white blood cells; an increase in the polymorphonuclears and a corresponding decrease in lymphocytes.

## SUMMARY AND CONCLUSIONS

A study was made of blood chemistry changes in dogs exposed to atmospheres which were depleted of oxygen at a rate which caused a progressive asphyxial condition simulating asphyxia resulting from exposure to approximately 0.6 per cent carbon monoxide in air by volume. The conditions caused death in 11 to 28.5 minutes. The study was made not only to ascertain the changes attending asphyxia by insufficient atmospheric oxygen, but also as a parallel to a similar study of the changes attending asphyxia by carbon monoxide in order to ascertain if there were changes which were peculiar to each type of asphyxia or if they were identical and due entirely to anoxemia.

1. There was a marked hyperglycemia and hyperuricemia; the non-protein nitrogen and urea increased slightly; the total and preformed creatinine remained practically normal; and the inorganic phosphorus increased.

2. There was an increase in the hydrogen ion concentration and a marked decrease in the carbon dioxide capacity of the plasma, and the carbon dioxide content of the blood.

3. The oxygen saturation of the arterial blood at death ranged from 1.3 to 8 per cent.

4. The red blood cells increased in one case, but showed no significant change in two. The white blood cells and polymorphonuclears increased while the lymphocytes decreased.



## ACKNOWLEDGMENTS

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SEVENTH AMERICAN SCIENTIFIC CONGRESS POSTPONED  
UNTIL 1933

The Mexican ambassador has informed the State Department that the Seventh American Scientific Congress, called to meet in the City of Mexico during the month of February, 1932, has been postponed until November, 1933.

The ambassador states:

In view of the general situation which prevents the majority of the countries of America from sending direct representatives to the Seventh American Scientific Congress, called for the month of February, 1932, in the City of Mexico, and considering the preparation required for the meeting in the same year of the Seventh International Conference of American States, it has been decided to postpone the holding of the said Scientific Congress until the month of November, 1933.

By instruction from my Government, I venture to request that Your Excellency be good enough to notify interested committees and organizations of the foregoing, suggesting to local committees the desirability of continuing the preparatory work they have already begun.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Status of employees of board of health of city health district.*—(Ohio Court of Appeals; Board of Health of City of Canton et al. v. State ex rel. O'Wesney, 178 N. E. 215; decided Feb. 16, 1931.) By a mandamus proceeding it was sought to require the board of health of the city of Canton to certify to the city auditor that the relator was entitled to be paid a certain sum of money as an employee of the board and to require the auditor to issue his warrant therefor to the city treasurer. It was alleged that the relator passed an examination before the civil service commission of Canton; that he was appointed meat inspector for the defendant board; that subsequently, after hearing charges against him, he was dismissed by the board from its service; and that, after explanations had been filed with the city civil service commission, the charges were dismissed by such commission as being unfounded and untrue. The defendants contended that the relator was not an employee of the city of Canton but an employee of the city board of health, which was a distinct political

subdivision of the State, independent of the city itself; that the board had absolute control over its employees; and that the order of the civil service commission was made without authority and was a nullity.

The court of appeals stated that the question presented was "whether or not the civil service laws of this State, as now enacted, apply to persons in the employ of a city district board of health," and, after reviewing the pertinent statutes, reached the conclusion "that the relator is not an employee of the city; that he is not entitled to the emoluments of his office, which he did not hold under the provisions of the civil service law; that the board of health of the Canton city district had the power to remove him from office; and that the acts of the city's civil service commission in reviewing and dismissing the charges against the relator and its attempt at reinstatement of the relator to office were of no force and effect in law and were a nullity."

### DEATHS DURING WEEK ENDED DECEMBER 26, 1931

*Summary of information received by telegraph from industrial insurance companies for the week ended December 26, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Dec. 26, 1931	Corresponding week, 1930
Policies in force.....	74, 282, 027	74, 818, 700
Number of death claims.....	10, 920	12, 146
Death claims per 1,000 policies in force, annual rate.....	7. 7	8. 5
Death claims per 1,000 policies, first 52 weeks of year, annual rate.....	9. 5	9. 5

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 26, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate <sup>1</sup> for the first 52 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mor- tality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1931	1930
Total (82 cities).....	7, 323	10. 7	544	43	12. 1	713	11. 7	11. 9
Akron.....	38	7. 5	1	10	6. 5	4	7. 5	7. 8
Albany <sup>1</sup> .....	40	10. 2	3	60	18. 8	8	14. 1	14. 8
Atlanta <sup>1</sup> .....	61	11. 5	5	49	16. 5	9	14. 9	15. 3
White.....	34	9. 6	2	30	12. 4	6	11. 5	11. 5
Colored.....	27	15. 1	3	87	24. 7	8	21. 5	23. 1
Baltimore <sup>1</sup> .....	200	12. 8	13	45	13. 8	22	14. 1	13. 9
White.....	152	11. 9	6	27	13. 0	12	12. 9	12. 7
Colored.....	48	17. 0	7	112	17. 8	10	19. 9	19. 6

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 26, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued*

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate <sup>1</sup> for the first 52 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1931	1930
Birmingham <sup>6</sup> .....	60	11.6	4	40	14.0	14	13.0	13.5
White.....	29	9.1	3	51	11.9	10	10.0	10.1
Colored.....	31	15.8	1	24	17.2	4	17.9	19.1
Boston.....	174	11.6	12	35	13.9	20	14.1	14.0
Bridgeport.....	31	11.0	2	34	7.8	1	11.0	10.8
Buffalo.....	127	11.4	9	41	13.0	16	12.8	12.9
Cambridge.....	38	17.4	1	21	14.2	2	12.1	11.9
Camden.....	31	13.0	4	69	8.3	5	14.2	13.3
Canton.....	18	8.8	1	25	6.9	0	9.9	9.8
Chicago <sup>1</sup> .....	600	9.0	55	49	10.1	45	10.4	10.4
Cincinnati.....	110	12.5	4	24	14.2	7	15.6	15.5
Cleveland.....	194	11.1	23	67	10.9	14	11.0	11.0
Columbus.....	56	9.9	2	19	15.6	11	13.4	15.3
Dallas <sup>6</sup> .....	60	11.5	9	-----	12.7	9	11.1	11.5
White.....	44	10.2	8	-----	11.8	7	9.8	10.5
Colored.....	16	17.6	1	-----	17.3	2	17.8	16.1
Dayton.....	32	7.2	2	28	9.7	3	10.4	9.6
Denver.....	85	15.2	3	30	16.6	7	13.8	15.0
Des Moines.....	33	11.9	5	95	11.7	5	11.0	11.6
Detroit.....	261	8.2	19	30	9.8	38	8.1	9.2
Duluth.....	18	9.2	1	27	13.4	1	11.2	11.6
El Paso.....	22	10.9	2	-----	19.3	4	14.9	17.1
Eric.....	24	10.6	3	62	10.3	2	10.4	11.0
Fall River <sup>6</sup> .....	29	13.1	1	24	8.1	3	11.1	11.5
Flint.....	12	3.8	1	13	6.3	2	6.7	8.9
Fort Worth <sup>6</sup> .....	30	9.3	2	-----	11.4	7	10.5	11.0
White.....	23	8.6	1	-----	12.5	6	10.1	10.5
Colored.....	7	13.4	1	-----	5.9	1	12.3	13.7
Grand Rapids.....	26	7.9	2	30	9.2	2	9.0	10.1
Houston <sup>6</sup> .....	42	7.1	6	-----	12.4	4	11.0	12.1
White.....	32	7.4	5	-----	11.5	3	10.1	10.8
Colored.....	10	6.3	1	-----	14.6	1	13.3	15.8
Indianapolis <sup>6</sup> .....	88	12.4	10	77	16.1	7	13.5	14.4
White.....	70	11.2	9	79	15.1	6	13.0	13.4
Colored.....	18	20.8	1	61	23.5	1	17.1	21.1
Jersey City.....	56	9.2	2	18	13.0	12	11.2	11.3
Kansas City, Kans. <sup>6</sup> .....	17	7.2	3	66	12.0	1	12.5	11.8
White.....	16	8.4	3	80	12.1	1	11.8	11.2
Colored.....	1	2.2	0	0	11.4	0	15.8	14.6
Kansas City, Mo.....	63	10.6	8	24	11.6	8	12.8	13.1
Knoxville <sup>6</sup> .....	17	8.1	2	43	15.2	4	12.6	13.4
White.....	12	6.8	1	24	14.0	3	11.7	12.5
Colored.....	5	14.6	1	194	21.1	1	16.6	18.4
Long Beach.....	25	8.6	2	50	14.9	4	9.8	10.2
Los Angeles.....	298	11.8	18	52	16.0	24	10.8	11.1
Louisville <sup>6</sup> .....	49	8.3	0	0	14.4	12	13.6	13.5
White.....	38	7.6	0	0	13.0	10	12.2	12.0
Colored.....	11	12.0	0	0	22.0	2	21.1	21.7
Lowell <sup>7</sup> .....	22	11.4	8	78	14.6	4	12.9	13.2
Lynn.....	14	7.1	2	58	13.2	2	9.4	10.5
Memphis <sup>6</sup> .....	70	14.1	11	117	14.8	11	16.3	16.8
White.....	32	10.4	7	118	14.3	7	13.3	13.2
Colored.....	38	20.0	4	116	15.6	4	21.3	22.6
Miami <sup>6</sup> .....	22	10.2	4	103	9.4	4	11.5	11.0
White.....	15	9.0	3	108	7.9	3	10.7	9.8
Colored.....	7	14.4	1	91	14.5	1	14.4	15.4
Milwaukee.....	88	7.7	10	45	9.4	12	9.0	9.7
Minneapolis.....	68	7.5	5	32	12.0	11	10.8	10.8
Nashville <sup>6</sup> .....	57	19.1	5	75	14.9	6	16.7	16.4
White.....	36	16.7	5	99	13.6	4	14.4	13.8
Colored.....	21	25.6	0	0	18.2	2	22.8	23.1
New Bedford <sup>7</sup> .....	16	7.4	2	52	10.7	2	12.0	11.0
New Haven.....	39	12.5	0	0	16.8	2	12.6	12.5
New Orleans <sup>6</sup> .....	137	15.3	8	45	21.2	20	16.5	17.4
White.....	90	14.1	5	42	18.7	11	13.5	14.4
Colored.....	47	18.2	3	60	27.8	9	23.9	24.9

See footnotes at end of table

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended December 28, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued*

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate <sup>2</sup> for the first 52 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1931	1930
New York.....	1,295	9.5	94	40	11.3	122	10.9	10.7
Bronx Borough.....	174	6.8	10	28	8.6	12	8.1	7.8
Brooklyn Borough.....	463	9.2	32	34	9.8	44	10.1	9.8
Manhattan Borough.....	468	13.4	38	51	17.0	50	16.4	16.0
Queens Borough.....	151	6.8	12	48	8.5	15	7.1	7.1
Richmond Borough.....	39	12.4	2	38	11.8	1	13.4	13.7
Newark, N. J.....	83	9.7	5	27	12.2	10	11.4	12.0
Oakland.....	73	13.0	2	25	13.1	2	10.9	11.1
Oklahoma City.....	34	9.0	5	70	8.9	1	10.6	10.9
Omaha.....	40	9.6	3	35	13.1	6	13.7	13.5
Paterson.....	26	9.8	1	17	10.9	4	13.1	12.1
Peoria.....	22	10.6	2	53	10.9	1	12.3	12.2
Philadelphia.....	478	12.7	46	67	11.1	29	12.8	12.6
Pittsburgh.....	149	11.5	17	59	15.5	17	14.2	13.8
Portland, Oreg.....	63	10.7	4	49	9.8	2	11.6	12.0
Providence.....	63	12.9	3	27	15.4	5	12.6	12.9
Richmond <sup>6</sup> .....	50	14.1	3	44	15.9	6	15.3	14.9
White.....	33	13.1	1	22	14.0	4	13.0	12.2
Colored.....	17	16.8	2	87	20.7	2	21.2	21.3
Rochester.....	73	11.5	2	18	11.6	6	11.7	11.5
St. Louis.....	202	12.7	10	36	13.4	11	14.7	14.0
St. Paul.....	51	9.6	4	41	10.1	1	10.4	10.1
Salt Lake City <sup>7</sup> .....	32	11.7	6	90	14.8	2	11.9	12.6
San Antonio.....	65	14.1	7	—	16.3	14	14.1	15.8
San Diego.....	50	16.7	0	0	14.0	4	13.7	14.5
San Francisco.....	166	13.3	5	33	11.0	5	13.0	13.0
Schenectady.....	23	12.5	0	0	10.3	3	10.9	11.0
Seattle.....	105	14.7	4	39	10.4	1	11.4	10.9
Somerville.....	17	8.4	1	31	10.0	3	8.9	9.7
South Bend.....	15	7.2	2	52	8.9	2	8.0	9.0
Spokane.....	22	9.9	0	0	10.8	1	12.4	12.4
Springfield, Mass.....	37	12.7	1	17	12.5	5	11.4	12.1
Syracuse.....	43	10.5	5	61	13.4	3	11.5	11.6
Tacoma.....	26	12.6	0	0	11.2	0	12.4	12.4
Toledo.....	54	9.5	3	28	10.6	7	11.7	12.6
Trenton.....	35	14.7	1	18	10.6	5	16.2	16.4
Utica.....	31	15.8	1	28	14.8	3	14.3	14.6
Washington, D. C. <sup>8</sup> .....	141	15.0	9	50	14.6	8	15.8	15.1
White.....	83	12.2	4	33	12.9	3	13.5	13.0
Colored.....	58	22.4	5	85	19.2	5	22.1	20.8
Waterbury.....	11	5.7	0	0	5.7	1	9.5	9.4
Wilmington, Del. <sup>7</sup> .....	22	10.8	2	45	18.1	2	13.8	14.5
Worcester.....	59	15.6	3	43	15.2	1	12.0	12.8
Yonkers.....	20	7.5	4	97	8.5	1	8.3	8.2
Youngstown.....	29	8.7	4	55	10.4	8	9.7	10.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 77 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended January 2, 1932, and January 3, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
<b>New England States:</b>								
Maine.....	6	6	2	2	375	11	0	1
New Hampshire.....	6				2	76	0	0
Vermont.....		4			162	8	0	0
Massachusetts.....	44	75	11	4	345	451	0	1
Rhode Island.....	5	5	7		666		0	0
Connecticut.....	5	9	2	2	61	168	0	0
<b>Middle Atlantic States:</b>								
New York.....	121	139	16	168	646	120	9	8
New Jersey.....	16	93	14	26	16	178	0	2
Pennsylvania.....	125	215			941	692	3	13
<b>East North Central States:</b>								
Ohio.....	150	64	40	26	153	53	3	9
Indiana.....	64	40	30	34	64	216	21	11
Illinois.....	122	135	19	22	36	457	3	7
Michigan.....	42	98	2	5	69	77	3	7
Wisconsin.....	15	22	15	6	79	154	2	0
<b>West North Central States:</b>								
Minnesota.....	19	12	3		48	15	3	3
Iowa.....	22	10			6	1	1	0
Missouri.....	55	43	3	12	10	983	1	3
North Dakota.....	6	10			24	15	0	0
South Dakota.....	6	5			35		0	0
Nebraska.....	6	6	2	17	5	8	0	0
Kansas.....	45	27	2	2	20	4	1	0
<b>South Atlantic States:</b>								
Delaware.....	8	6	1	4	1	3	0	0
Maryland <sup>2</sup> .....	49	18	42	11	13	57	1	1
District of Columbia.....	6	5			2	14	1	0
West Virginia.....	29	11	15	61	265	21	0	1
North Carolina.....	73	56	34	28	67	125	3	0
South Carolina <sup>3</sup> .....	24	21	387	703	21		0	2
Georgia <sup>4</sup> .....	11	15	58	85		78	0	19
Florida.....	9		3	4	1	42	0	2

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, current week, 2 cases. 1 case in South Carolina and 1 case in Georgia.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931
<b>East South Central States:</b>								
Kentucky.....	53	8				18	6	4
Tennessee.....	52	16	49	85	10	81	4	3
Alabama.....	45	30	52	60	6	233	1	1
Mississippi.....	23	23					1	1
<b>West South Central States:</b>								
Arkansas.....	19	13	6	89	1	2	0	0
Louisiana.....	34	50	4	48	12	1	1	1
Oklahoma <sup>1</sup> .....	58	34	53	77	1	31	0	1
Texas.....	94	49	14	14		101	1	1
<b>Mountain States:</b>								
Montana.....	1				98	3	0	1
Idaho.....	1			1		28	0	0
Wyoming.....				3	9	1	0	1
Colorado.....	4	9			1	40	1	1
New Mexico.....	38	4			1	40	1	0
Arizona.....	6	2	6	6		83	0	1
Utah <sup>2</sup> .....		6	4	1		5	0	1
<b>Pacific States:</b>								
Washington.....	5	11			187	27	1	1
Oregon.....	1	7	65	20	6	49	1	1
California.....	63	53	161	54	177	169	6	12

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931	Week ended Jan 2, 1932	Week ended Jan 3, 1931
<b>New England States:</b>								
Maine.....	2	3	35	24	0	0	3	4
New Hampshire.....	1	0	10	2	1	0	0	0
Vermont.....	0	0	12	1	10	3	0	1
Massachusetts.....	1	5	372	262	0	0	20	2
Rhode Island.....	0	0	50	22	0	0	0	0
Connecticut.....	0	0	65	57	2	0	2	2
<b>Middle Atlantic States:</b>								
New York.....	17	4	582	494	3	1	19	7
New Jersey.....	0	0	144	210	0	0	2	7
Pennsylvania.....	2	3	495	601	0	0	16	13
<b>East North Central States:</b>								
Ohio.....	2	5	595	576	22	58	20	19
Indiana.....	4	0	81	213	10	98	9	1
Illinois.....	1	6	287	346	38	34	13	21
Michigan.....	2	3	251	358	4	52	4	8
Wisconsin.....	1	2	65	102	8	3	3	5
<b>West North Central States:</b>								
Minnesota.....	1	2	46	35	9	2	1	0
Iowa.....	3	1	32	62	47	23	0	1
Missouri.....	0	2	56	119	19	6	0	1
North Dakota.....	0	0	18	21	12	7	3	3
South Dakota.....	1	0	14	16	12	16	2	1
Nebraska.....	1	2	39	37	5	76	1	0
Kansas.....	0	1	60	41	1	52	3	8
<b>South Atlantic States:</b>								
Delaware.....	0	0	17	31	0	0	0	0
Maryland <sup>1</sup> .....	0	0	86	86	0	0	10	7
District of Columbia.....	0	3	23	30	0	0	1	0
West Virginia.....	1	0	22	39	6	8	24	2
North Carolina.....	0	0	73	75	0	1	4	3
South Carolina <sup>2</sup> .....	0	1	14	11	2	0	12	6
Georgia <sup>3</sup> .....	0	0	26	27	1	0	7	3
Florida.....	0	0	12	16	0	0	1	3

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, current week, 2 cases: 1 case in South Carolina and 1 case in Georgia.

<sup>3</sup> Figures for current week are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	81	60	0	5	3	2
Tennessee.....	1	0	43	54	12	0	13	4
Alabama.....	0	0	44	64	1	1	17	8
Mississippi.....	1	0	17	25	22	5	4	7
<b>West South Central States:</b>								
Arkansas.....	0	0	17	12	26	3	2	5
Louisiana.....	1	2	28	17	2	6	6	6
Oklahoma <sup>1</sup> .....	0	1	42	61	4	71	5	11
Texas.....	0	0	49	35	22	11	12	10
<b>Mountain States:</b>								
Montana.....	3	0	21	39	2	18	1	0
Idaho.....	0	0	8	5	2	2	0	2
Wyoming.....	0	0	8	12	1	2	0	2
Colorado.....	0	0	21	35	5	4	1	0
New Mexico.....	0	0	29	5	1	1	3	1
Arizona.....	0	0	6	4	2	0	1	1
Utah <sup>1</sup> .....	0	2	5	3	0	0	0	2
<b>Pacific States:</b>								
Washington.....	0	0	56	41	10	22	3	5
Oregon.....	0	1	31	8	6	13	1	1
California.....	5	16	115	86	9	67	3	8

<sup>1</sup> Week ended Friday.

<sup>2</sup> Figures for current week are exclusive of Oklahoma City and Tulsa.

**Report for Week Ended December 26, 1931**

**TEXAS**

	Cases		Cases
Diphtheria.....	74	Scarlet fever.....	58
Influenza.....	7	Smallpox.....	9
Measles.....	3	Typhoid fever.....	15
Poliomyelitis.....	1		

**SUMMARY OF MONTHLY REPORTS FROM STATES**

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Men- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Mea- sles	Pellag- ra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1931</i>										
California.....	15	456	200	7	574	4	16	579	28	45
Louisiana.....	8	243	40	66	28	39	3	148	14	96
Nevada.....			3					5	0	0
North Carolina.....	9	691	214		184	177	12	714	4	64
Oklahoma <sup>1</sup> .....	5	431	88	69	8	11	2	192	23	107
Texas.....	4	364	33	642		5	1	183		48
Virginia.....	5	1,335	769	31	211	13	5	729	6	180
Washington.....	4	50	36		135		9	235	58	22
Wisconsin.....	3	95	64		101		26	294	29	16

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

November, 1931

November, 1931		Paratyphoid fever:	
Anthrax:	Cases	California	Cases
California	1	Louisiana	1
Botulism:		Puerperal septicemia:	
California	2	Washington	2
Chicken pox:		Rabies in animals:	
California	1,031	California	36
Louisiana	12	Louisiana	8
Nevada	2	Rocky Mountain spotted or tick fever:	
North Carolina	389	Nevada	1
Oklahoma <sup>1</sup>	46	Scabies:	
Virginia	419	Oklahoma <sup>1</sup>	4
Washington	442	Washington	1
Wisconsin	1,172	Septic sore throat:	
Conjunctivitis:		California	4
Oklahoma <sup>1</sup>	1	Louisiana	4
Diarrhea and dysentery:		North Carolina	15
Virginia	126	Oklahoma <sup>1</sup>	22
Dysentery:		Tetanus:	
California (amebic)	9	California	7
California (bacillary)	20	Louisiana	3
Louisiana	3	Trachoma:	
Oklahoma <sup>1</sup>	11	California	18
Washington	6	Oklahoma <sup>1</sup>	4
Food poisoning:		Trichinosis:	
California	7	California	2
German measles:		Tularaemia:	
California	33	Louisiana	2
North Carolina	12	Virginia	2
Washington	17	Wisconsin	3
Wisconsin	19	Typhus fever:	
Hookworm disease:		North Carolina	3
Louisiana	22	Virginia	1
Impetigo contagiosa:		Undulant fever:	
Washington	11	California	8
Leprosy:		Louisiana	2
California	1	Oklahoma <sup>1</sup>	1
Lethargic encephalitis:		Virginia	1
California	3	Washington	1
Louisiana	3	Wisconsin	7
Washington	1	Vincent's angina:	
Wisconsin	1	Washington	1
Mumps:		Whooping cough:	
California	409	California	351
Louisiana	3	Louisiana	19
Oklahoma <sup>1</sup>	30	Nevada	11
Washington	97	North Carolina	536
Wisconsin	518	Oklahoma <sup>1</sup>	25
Ophthalmia neonatorum:		Virginia	738
California	2	Washington	62
Oklahoma <sup>1</sup>	1	Wisconsin	667

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.



# Cases of Certain Communicable Diseases Reported for the Month of October, 1931, by State Health Officers

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	50	17	346	8	64	0	54	89	86
New Hampshire.....		15			27	0		2	
Vermont.....	46	9	78	25	21	20	121	2	123
Massachusetts.....	208	196	173	293	682	0	498	35	323
Rhode Island.....	12	18	235	9	55	0	53	4	9
Connecticut.....	30	20	31	44	100	0	122	21	190
New York.....	412	318	206	232	886	26	1,732	191	1,117
New Jersey.....	153	118	50	43	326	0	408	37	672
Pennsylvania.....	691	409	227	516	882	0	720	336	1,537
Ohio.....	583	734	152	381	1,438	16	602	224	914
Indiana.....	120	270	77	44	293	31	198	71	95
Illinois.....	292	462	85	101	795	34	721	176	894
Michigan.....	253	156	132	136	491	22	449	79	869
Wisconsin.....	382	86	51	362	221	7	124	17	559
Minnesota.....	212	102	25		180	5	263	22	77
Iowa.....	126	76	16	19	119	73	50	25	61
Missouri.....	77	470	24	11	363	18	257	121	351
North Dakota.....	35	21	21	54	44	17	14	24	89
South Dakota.....	102	34	119	37	41	11	5	11	24
Nebraska.....	71	81	5	35	73	10	30	6	33
Kansas.....	175	217	59	88	275	11	130	45	62
Delaware.....	3		2	11		0	21		25
Maryland.....	49	302	33	58	311	0	245	188	584
District of Columbia.....	6	63	5		55	0	99	13	52
Virginia.....	87	1,360	78		557	4	151	215	742
West Virginia.....	59	437	229		319	1	57	36	140
North Carolina.....	109	865	148		581	5		116	345
South Carolina.....	45	310	29	66	90	7	141	121	91
Georgia.....	12	232	18	9	127		152	152	18
Florida.....	3	101	126	8	18	0	30	17	18
Kentucky <sup>1</sup> .....									
Tennessee.....	15	802	16	32	359	13	170	252	189
Alabama.....	57	557	31	63	304	9	441	128	58
Mississippi.....	153	725	14	36	229	77	116	114	252
Arkansas.....	15	233	16	7	116	10	121	76	9
Louisiana.....	1	164	18	1	83	4	178	139	16
Oklahoma <sup>1</sup> .....	1	577	10	7	193	15	40	221	45
Texas.....		225			167			162	
Montana.....	54	2	118	4	45	1	41	21	44
Idaho.....	76		8	23	60	4	19	17	4
Wyoming.....	29	2	1	7	17	1	11	1	8
Colorado.....	107	30	11	28	76	0	58	63	34
New Mexico.....	25	78	1	16	34	1	85	54	11
Arizona.....	50	26	3	3	22	1	143	17	14
Utah <sup>1</sup> .....									
Nevada.....	8	2			4	1	2	3	4
Washington.....	331	41	69	58	165	22	142	22	104
Oregon.....	178	16	37	68	64	19	87	16	24
California.....	512	338	442	351	461	28	735	63	863

<sup>1</sup> Pulmonary.<sup>2</sup> Reports received weekly.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

## Case Rates per 100,000 Population (Annual Basis) for the Month of October, 1931

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid	Whoop- ing cough
Maine.....	73	25	509	12	94	0	79	57	53
New Hampshire.....	38	38	.....	.....	66	0	.....	5	.....
Vermont.....	150	29	255	52	69	65	1 69	7	402
Massachusetts.....	57	54	47	80	187	0	136	10	88
Rhode Island.....	20	30	397	15	93	0	89	7	15
Connecticut.....	22	14	22	32	72	0	88	15	141
New York.....	38	29	27	21	61	2	159	17	102
New Jersey.....	43	33	14	12	93	0	116	10	191
Pennsylvania.....	84	49	64	62	107	0	87	41	186
Ohio.....	102	128	26	66	251	3	105	39	159
Indiana.....	43	97	28	16	105	11	71	26	34
Illinois.....	44	61	13	15	120	5	109	27	135
Michigan.....	60	37	31	32	116	5	106	19	205
Wisconsin.....	151	34	20	139	87	3	49	7	221
Minnesota.....	97	46	11	.....	82	2	120	10	35
Iowa.....	60	36	8	9	57	35	24	12	29
Missouri.....	25	151	8	4	117	6	83	39	113
North Dakota.....	60	36	36	93	76	29	24	41	163
South Dakota.....	172	57	200	62	69	19	8	19	40
Nebraska.....	60	69	4	30	62	8	25	5	32
Kansas.....	109	135	37	55	171	7	81	28	39
Delaware.....	15	.....	10	54	.....	0	103	.....	123
Maryland.....	35	215	23	41	221	0	174	134	416
District of Columbia.....	14	150	12	.....	131	0	236	31	124
Virginia.....	42	657	38	.....	269	2	73	104	262
West Virginia.....	39	292	153	.....	213	1	38	205	94
North Carolina.....	40	314	54	.....	211	2	.....	42	125
South Carolina.....	30	209	20	45	61	5	95	82	61
Georgia.....	5	94	7	4	51	0	61	61	7
Florida.....	2	78	97	6	14	0	28	13	14
Kentucky <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee.....	7	350	7	14	159	6	78	112	84
Alabama.....	25	244	14	28	133	4	194	66	25
Mississippi.....	88	419	8	21	132	45	67	66	146
Arkansas.....	9	147	10	4	73	6	1 13	48	6
Louisiana.....	1	90	10	1	46	2	1 98	77	9
Oklahoma <sup>2</sup> .....	1	324	6	4	109	8	28	124	25
Texas.....	.....	44	.....	.....	33	.....	.....	32	.....
Montana.....	118	4	258	9	99	2	90	46	96
Idaho.....	200	.....	21	61	158	11	1 24	45	11
Wyoming.....	149	10	5	36	87	5	1 5	5	41
Colorado.....	120	34	12	31	85	0	65	71	38
New Mexico.....	68	213	3	44	98	8	232	148	30
Arizona.....	131	68	8	8	58	3	376	45	37
Utah <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nevada.....	38	25	.....	.....	51	13	25	38	51
Washington.....	245	30	51	43	122	16	105	16	77
Oregon.....	215	19	45	82	77	23	45	19	29
California.....	101	67	87	69	91	6	145	12	72

<sup>1</sup> Pulmonary.<sup>2</sup> Reports received weekly.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

## ADMISSIONS TO HOSPITALS FOR THE INSANE, NOVEMBER, 1929

Reports for the month of November, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 122 hospitals, located in 41 States, the District of Columbia, and the Territory of Hawaii. The 122 hospitals had 191,181 patients on November 30, 1929, 101,692 males and 89,489 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of November, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	4	1	5
2. Senile psychoses.....	152	110	262
3. Psychoses with cerebral arteriosclerosis.....	192	90	282
4. General paralysis.....	221	72	293
5. Psychoses with cerebral syphilis.....	25	8	33
6. Psychoses with Huntington's chorea.....	3	4	7
7. Psychoses with brain tumor.....	3	0	3
8. Psychoses with other brain or nervous disease.....	28	11	39
9. Alcoholic psychoses.....	131	17	148
10. Psychoses due to drugs and other exogenous toxins.....	26	7	33
11. Psychoses with pellagra.....	9	19	28
12. Psychoses with other somatic diseases.....	37	40	77
13. Manic-depressive psychoses.....	201	264	465
14. Involution melancholia.....	21	54	75
15. Dementia præcox (schizophrenia).....	340	277	617
16. Paranoia and paranoid conditions.....	28	24	52
17. Epileptic psychoses.....	46	28	74
18. Psychoneuroses and neuroses.....	16	46	62
19. Psychoses with psychopathic personality.....	12	9	21
20. Psychoses with mental deficiency.....	65	49	114
21. Undiagnosed psychoses.....	114	76	190
22. Without psychosis.....	176	59	235
Total.....	1,850	1,265	3,115

During the month of November, 1929, there were 3,115 new admissions to the hospitals, 59.4 per cent of these new admissions being males and 40.6 per cent females, the ratio being 146 males per 100 females. Four hundred and twenty-five of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,690 new admissions for whom a provisional diagnosis was made. Of these 2,690 patients, cases of dementia præcox constituted 22.9 per cent; manic-depressive psychoses, 17.3 per cent; general paralysis, 10.9 per cent; psychoses with cerebral arteriosclerosis, 10.5 per cent; and senile psychoses, 9.7 per cent. These five classes accounted for 71.3 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on November 30, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals.....	90,554	80,634	171,188
On parole or otherwise absent, but still on books.....	11,138	8,855	19,993
Total.....	101,692	89,489	191,181

Of the 191,181 patients, 11,138 males and 8,855 females were on parole or otherwise absent but still on the books at the end of the month—11 per cent of the males, 9.9 per cent of the females, and 10.5 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,370,000. The estimated population of the 90 cities reporting deaths is more than 31,825,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended December 26, 1931, and December 27, 1930*

	1931	1930	Estimated expectancy
<i>Cases reported</i>			
Diphtheria			
46 States.....	1,472	1,110	
97 cities.....	464	451	918
Measles:			
45 States.....	3,183	3,202	
97 cities.....	811	1,141	
Meningococcus meningitis:			
46 States.....	50	88	
97 cities.....	27	92	
Poliomyelitis:			
46 States.....	39	53	
Scarlet fever:			
46 States.....	3,464	3,566	
97 cities.....	1,197	1,397	1,208
Smallpox:			
46 States.....	323	440	
97 cities.....	23	44	31
Typhoid fever:			
46 States.....	265	205	
97 cities.....	40	45	33
<i>Deaths reported</i>			
Influenza and pneumonia:			
90 cities.....	673	822	
Smallpox:			
90 cities.....	0	0	

*City reports for week ended December 26, 1931*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	11	1	1	-----	0	27	0	1
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	0
Nashua.....	0	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	0	0
Massachusetts:								
Boston.....	50	43	14	6	1	6	8	17
Fall River.....	1	4	3	-----	0	1	0	2
Springfield.....	11	5	1	-----	0	0	4	1
Worcester.....	10	6	3	-----	0	1	22	5
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	7	7	3	-----	1	357	16	5
Connecticut:								
Bridgeport.....	6	6	1	1	1	1	0	5
Hartford.....	1	7	0	-----	0	0	1	1
New Haven.....	13	0	1	1	0	0	11	2
MIDDLE ATLANTIC								
New York:								
Buffalo.....	24	13	0	-----	1	10	2	14
New York.....	97	170	109	13	5	18	37	130
Rochester.....	6	6	0	-----	0	15	5	5
Syracuse.....	13	2	0	-----	0	4	1	2
New Jersey:								
Camden.....	5	5	0	2	2	0	0	5
Newark.....	42	17	2	3	0	0	7	10
Trenton.....	9	2	0	2	0	2	9	3
Pennsylvania:								
Philadelphia.....	68	61	4	5	6	4	8	43
Pittsburgh.....	28	21	11	3	1	94	24	13
Reading.....	4	1	1	-----	0	0	0	1
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	8	10	8	-----	1	0	0	8
Cleveland.....	73	36	10	12	0	28	33	13
Columbus.....	10	5	9	1	0	1	0	3
Toledo.....	53	9	5	-----	0	2	3	1
Indiana:								
Fort Wayne.....	3	3	8	-----	1	0	0	1
Indianapolis.....	18	9	2	-----	0	0	19	12
South Bend.....	-----	1	-----	-----	-----	-----	-----	-----
Terre Haute.....	7	0	3	-----	0	0	0	0
Illinois:								
Chicago.....	72	121	34	2	4	13	0	54
Peoria.....	5	1	2	-----	0	0	0	2
Springfield.....	3	1	2	-----	0	0	1	3
Michigan:								
Detroit.....	28	60	27	2	1	2	1	20
Flint.....	11	2	1	-----	0	1	13	2
Grand Rapids.....	3	1	6	-----	1	6	4	1

## City reports for week ended December 26, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha.....	8	0	1	-----	0	0	0	0
Madison.....	7	2	2	-----	-----	0	0	-----
Milwaukee.....	55	17	2	-----	0	3	13	8
Racine.....	16	2	0	-----	0	0	22	1
Superior.....	2	0	0	-----	0	0	5	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	3	0	0	-----	0	0	1	1
Minneapolis.....	15	16	2	-----	0	1	5	5
St. Paul.....	5	8	5	-----	0	2	0	5
Iowa:								
Des Moines.....	0	1	7	-----	-----	0	0	-----
Sioux City.....	2	1	5	-----	-----	0	0	-----
Waterloo.....	5	0	0	-----	-----	0	0	-----
Missouri:								
Kansas City.....	20	6	20	-----	0	1	0	9
St. Joseph.....	1	0	4	-----	0	0	0	5
St. Louis.....	33	40	19	4	1	0	2	8
North Dakota:								
Fargo.....	1	0	0	-----	0	21	0	0
Grand Forks.....	5	0	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	10	0	0	-----	-----	13	0	-----
Nebraska:								
Omaha.....	4	5	11	-----	0	0	0	3
Kansas:								
Topeka.....	3	1	0	-----	0	0	0	0
Wichita.....	7	2	4	-----	0	1	0	4
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	1	-----	0	0	1	4
Maryland:								
Baltimore.....	38	25	13	14	1	2	34	20
Cumberland.....	0	0	0	-----	0	0	0	0
Frederick.....	0	0	1	-----	0	0	0	1
District of Columbia:								
Washington.....	10	16	8	2	2	0	0	16
Virginia:								
Lynchburg.....	1	2	1	-----	0	0	1	2
Richmond.....	0	6	7	-----	1	0	0	3
Roanoke.....	1	2	0	-----	0	0	0	2
West Virginia:								
Charleston.....	5	1	0	-----	0	1	0	1
Huntington.....	0	-----	4	-----	0	0	0	0
Wheeling.....	2	1	0	-----	0	0	0	1
North Carolina:								
Raleigh.....	0	1	1	-----	0	3	0	1
Wilmington.....	3	1	0	-----	0	0	0	0
Winston-Salem.....	8	1	0	-----	0	0	0	8
South Carolina:								
Charleston.....	0	0	2	23	0	0	0	3
Columbia.....	0	0	0	-----	0	0	0	0
Greenville.....	0	-----	0	-----	0	0	0	0
Georgia:								
Atlanta.....	4	6	13	6	1	0	1	8
Brunswick.....	0	0	0	-----	1	1	0	0
Savannah.....	0	0	1	6	0	0	0	2
Florida:								
Miami.....	1	2	2	-----	0	1	0	4
Tampa.....	0	1	2	-----	0	0	0	0

## City reports for week ended December 26, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	-----	0	0	0	1
Lexington.....	1	-----	2	-----	0	0	0	3
Tennessee:								
Memphis.....	1	5	10	-----	1	1	0	10
Nashville.....	0	2	0	-----	1	1	0	3
Alabama:								
Birmingham.....	1	5	6	6	3	1	0	3
Mobile.....	1	1	1	-----	0	0	0	1
Montgomery.....	0	1	2	-----	-----	0	2	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	1	0	3	-----	-----	0	0	-----
Little Rock.....	0	1	2	-----	0	0	0	0
Louisiana:								
New Orleans.....	0	13	9	2	1	0	0	13
Shreveport.....	5	2	4	-----	0	12	2	2
Oklahoma:								
Muskogee.....	0	-----	6	2	0	0	0	0
Oklahoma City.....	0	2	4	4	1	0	0	1
Tulsa.....	0	4	0	-----	-----	0	0	-----
Texas:								
Dallas.....	0	14	0	-----	3	0	0	14
Fort Worth.....	3	5	8	-----	0	0	0	4
Galveston.....	0	1	1	-----	0	0	0	0
Houston.....	0	9	14	-----	0	0	0	3
San Antonio.....	0	4	1	1	3	0	0	6
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	13	0	0
Great Falls.....	3	0	0	-----	0	0	0	0
Helena.....	0	0	0	-----	0	24	0	0
Missoula.....	0	1	0	-----	0	0	0	0
Idaho:								
Boise.....	2	1	0	-----	0	0	0	2
Colorado:								
Denver.....	16	8	3	-----	8	2	2	18
Pueblo.....	11	0	0	-----	0	0	0	0
New Mexico:								
Albuquerque.....	7	0	0	-----	0	1	0	0
Arizona:								
Phoenix.....	0	0	0	-----	0	0	0	3
Utah:								
Salt Lake City.....	40	8	0	-----	0	0	1	4
Nevada:								
Reno.....	0	0	0	-----	0	0	0	2
PACIFIC								
Washington:								
Seattle.....	21	4	0	-----	-----	105	5	-----
Spokane.....	16	1	0	-----	-----	0	0	-----
Tacoma.....	11	2	1	-----	0	2	1	4
Oregon:								
Portland.....	14	9	1	-----	0	3	6	5
Salem.....	1	0	0	3	0	0	0	2
California:								
Los Angeles.....	10	35	15	46	1	0	0	18
Sacramento.....	1	2	3	1	1	22	0	7
San Francisco.....	25	15	2	10	1	3	0	12

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
<b>NEW ENGLAND</b>											
Maine:											
Portland.....	3	2	0	0	0	1	0	0	0	0	23
New Hampshire:											
Concord.....	0	1	0	0	0	2	0	0	0	0	10
Nashua.....	0	0	0	0	0	0	0	0	0	0	
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	1	2
Massachusetts:											
Boston.....	71	85	0	0	0	11	1	0	1	20	174
Fall River.....	3	4	0	0	0	3	0	0	0	0	29
Springfield.....	8	7	0	0	0	1	0	0	0	1	35
Worcester.....	12	34	0	0	0	3	0	0	0	14	59
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	12
Providence.....	11	14	0	0	0	0	0	0	0	6	63
Connecticut:											
Bridgeport.....	9	4	0	0	0	1	0	0	0	3	31
Hartford.....	7	7	0	0	0	2	0	1	0	10	34
New Haven.....	4	4	0	0	0	1	0	0	0	0	39
<b>MIDDLE ATLANTIC</b>											
New York:											
Buffalo.....	24	35	0	0	0	4	0	0	0	26	124
New York.....	167	190	0	0	0	65	10	7	1	86	1,295
Rochester.....	11	34	0	0	0	4	0	0	0	2	70
Syracuse.....	11	12	0	0	0	0	0	0	0	41	43
New Jersey:											
Camden.....	7	13	0	0	0	0	0	0	0	3	31
Newark.....	18	10	0	0	0	4	1	0	0	34	87
Trenton.....	4	3	0	0	0	1	0	0	0	0	35
Pennsylvania:											
Philadelphia.....	79	109	0	0	0	33	2	2	1	114	478
Pittsburgh.....	38	53	0	0	0	7	1	0	0	14	149
Reading.....	2	0	0	0	0	0	0	0	0	8	42
<b>EAST NORTH CENTRAL</b>											
Ohio:											
Cincinnati.....	18	36	1	0	0	8	1	0	0	5	110
Cleveland.....	37	38	0	0	0	12	1	2	0	84	194
Columbus.....	11	9	0	0	0	4	0	0	0	16	56
Toledo.....	13	3	0	0	0	2	1	0	0	36	54
Indiana:											
Fort Wayne.....	3	2	0	0	0	0	0	0	0	0	23
Indianapolis.....	10	2	5	0	0	3	0	0	0	11	
South Bend.....	3		1								
Terre Haute.....	3	1		0	0	0	0	0	0	2	21
Illinois:											
Chicago.....	118	128	1	6	0	40	3	1	0	84	600
Peoria.....		2		0	0	0		1	0	5	22
Springfield.....	2	1	0	0	0	1	0	0	0	2	18
Michigan:											
Detroit.....	94	111	1	0	0	20	1	1	0	80	261
Flint.....	11	10	1	0	0	0	0	0	0	1	12
Grand Rapids.....	11	3	0	0	0	0	0	0	0	4	26
Wisconsin:											
Kenosha.....	2	0	0								



## City reports for week ended December 26, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	10	3	0	0	0	0	0	0	0	2	18
Minneapolis.....	45	8	0	1	0	0	0	0	0	2	68
St. Paul.....	23	9	1	0	0	0	0	1	0	4	55
Iowa:											
Des Moines.....	8	2	1	0	—	—	0	0	—	0	33
Sioux City.....	1	1	1	0	—	—	0	0	—	2	—
Waterloo.....	2	1	1	0	—	—	0	0	—	7	—
Missouri:											
Kansas City.....	15	14	0	0	0	5	0	0	0	14	83
St. Joseph.....	2	3	0	0	0	4	0	0	0	1	20
St. Louis.....	37	20	0	0	0	11	2	1	0	56	202
North Dakota:											
Fargo.....	1	1	0	0	0	0	0	0	0	0	—
Grand Forks.....	1	0	0	0	—	—	0	0	—	0	—
South Dakota:											
Aberdeen.....	0	0	0	0	—	—	0	0	—	1	—
Nebraska:											
Omaha.....	6	3	2	0	0	0	0	0	2	0	40
Kansas:											
Topeka.....	2	0	0	0	0	0	0	0	0	4	20
Wichita.....	4	3	0	4	0	0	0	0	0	1	20
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	2	1	0	0	0	1	0	1	0	0	22
Maryland:											
Baltimore.....	29	15	0	0	0	12	2	2	1	80	200
Cumberland.....	1	5	0	0	0	0	0	2	0	1	15
Frederick.....	0	2	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington.....	22	8	0	0	0	5	1	1	1	10	141
Virginia:											
Lynchburg.....	1	0	0	0	0	0	0	0	0	5	8
Richmond.....	8	12	0	0	0	4	1	0	0	0	56
Roanoke.....	3	2	0	0	0	1	0	0	0	0	13
West Virginia:											
Charleston.....	2	0	0	0	0	0	0	0	0	3	15
Huntington.....	—	1	—	0	0	0	—	0	0	0	—
Wheeling.....	2	1	0	0	0	0	0	1	0	3	15
North Carolina:											
Raleigh.....	0	1	0	0	0	1	0	0	0	0	14
Wilmington.....	1	0	0	0	0	1	0	0	0	5	11
Winston-Salem.....	1	1	0	0	0	0	0	0	0	2	15
South Carolina:											
Charleston.....	0	0	0	0	0	4	0	0	0	0	19
Columbia.....	1	0	0	0	0	0	0	0	0	0	—
Greenville.....	—	0	—	0	0	0	—	0	0	0	—
Georgia:											
Atlanta.....	5	4	0	0	0	1	0	0	0	0	61
Brunswick.....	0	0	0	0	0	0	0	0	0	0	6
Savannah.....	1	2	0	0	0	1	0	0	0	2	25
Florida:											
Miami.....	1	0	0	0	0	2	0	0	0	0	22
Tampa.....	1	0	0	0	0	3	0	0	0	0	24
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	3	5	0	0	0	1	0	0	0	1	19
Lexington.....	—	0	—	0	0	0	—	0	0	2	11
Tennessee:											
Memphis.....	7	4	0	0	0	7	1	0	0	7	70
Nashville.....	3	2	0	0	0	3	0	0	0	0	57
Alabama:											
Birmingham.....	5	10	1	0	0	3	0	1	0	0	60
Mobile.....	1	5	0	0	0	2	0	0	0	0	15
Montgomery.....	1	1	0	0	—	—	0	1	—	0	—

1 2 Non-residents.

## City reports for week ended December 26, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	1	0	0			0	0		2	
Little Rock.....	2	3	0	0	0	0	0	0	0	0	
Louisiana:											
New Orleans.....	7	2	0	0	0	4	2	12	0	0	187
Shreveport.....	1	1	0	0	0	3	0	1	0	4	
Oklahoma:											
Muskogee.....		1		0	0			0	0	0	
Oklahoma City.....	2	6	0	0	0	3	0	0	0	0	34
Tulsa.....	3	4	0	0			1	0		0	
Texas:											
Dallas.....	7	0	3	0	0	3	0	0	0	0	60
Fort Worth.....	3	10	0	3	0	0	0	0	0	0	30
Galveston.....	1	0	0	0	0	0	0	0	0	0	10
Houston.....	3	5	1	2	0	2	0	0	0	0	42
San Antonio.....	2	0	0	0	0	2	0	0	0	0	65
MOUNTAIN											
Montana:											
Billings.....	1	0	1	0	0	0	0	0	0	0	2
Great Falls.....	3	2	0	0	0	2	0	0	0	1	11
Helena.....	1	1	0	0	0	0	0	0	0	0	3
Missoula.....	1	0	0	0	0	0	0	0	0	0	6
Idaho:											
Boise.....	0	0	1	0	0	0	0	0	0	0	3
Colorado:											
Denver.....	14	9	0	0	0	3	0	0	0	2	89
Pueblo.....	1	0	0	0	0	1	0	0	0	0	10
New Mexico:											
Albuquerque.....	0	2	0	0	0	3	0	1	0	0	8
Arizona:											
Phoenix.....	1	0	0	0	0	1		0	0	0	
Utah:											
Salt Lake City.....	2	1	0	0	0	0	0	0	0	0	32
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle.....	8	5	1	3			0	0		2	
Spokane.....	8	0	3	0			0	0		2	
Tacoma.....	4	0	2	0	0	0	0	0	0	12	26
Oregon:											
Portland.....	7	3	5	1	0	0	0	1	0	0	63
Salem.....	1	0	0	0	0	0		0	0	3	17
California:											
Los Angeles.....	30	24	1	0	0	25	2	1	0	13	298
Sacramento.....	2	0	0	0	0	1	0	0	0	0	25
San Francisco.....	17	2	2	1	0	8	1	1	0	3	187

[City reports for week ended December 26, 1931—Continued]

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston.....	1	0	0	0	0	1	1	0	0
Worcester.....	0	1	0	0	0	0	0	0	0
Rhode Island:									
Providence.....	0	0	0	0	0	0	0	1	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	3	2	1	1	0	0	1	5	3
Pennsylvania:									
Philadelphia.....	0	1	1	1	0	0	0	1	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	0	1	0	0	0	0	0	0	0
Cleveland.....	0	0	1	0	0	0	0	0	0
Indiana:									
Indianapolis.....	8	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	2	3	0	0	0	0	0	0	0
Michigan:									
Detroit.....	2	0	0	0	0	0	0	1	0
Wisconsin:									
Milwaukee.....	0	0	0	0	0	0	0	1	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Duluth.....	1	1	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	3	1	0	0	0	0	0	0	0
Kansas:									
Topeka.....	0	0	0	0	0	1	0	0	
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	0	0	0	1	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta.....	1	1	0	0	1	1	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	2	0	0	0	0
Florida:									
Miami.....	0	0	0	0	0	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Lexington.....	1	1	0	0	0	0	-----	0	0
Tennessee:									
Memphis.....	2	0	0	0	0	1	0	0	0
Nashville.....	1	0	0	0	0	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	1	1	0	0	0
Shreveport.....	0	0	0	0	0	3	0	0	0
Texas:									
Dallas.....	0	0	0	0	0	1	0	0	0
Fort Worth.....	0	0	0	0	0	3	0	0	0
Galveston.....	0	1	0	0	0	0	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Spokane.....	0	0	0	0	0	0	0	1	0
Tacoma.....	1	1	0	0	0	0	0	0	0
California: <sup>1</sup>									
San Francisco.....	0	1	0	0	0	0	0	0	0

<sup>1</sup> Typhus fever, 2 cases; 1 case at Savannah, Ga.; and 1 case at Los Angeles, Calif.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 26, 1931, compared with those for a like period ended December 27, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

*Summary of weekly reports from cities, November 22 to December 26, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930.<sup>1</sup>*

#### DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930
98 cities.....	84	87	101	90	93	87	103	94	72	71
New England.....	67	87	58	121	70	128	84	143	65	75
Middle Atlantic.....	58	48	54	58	59	47	71	62	57	47
East North Central.....	71	122	94	112	86	120	104	116	70	102
West North Central.....	138	110	222	101	168	97	187	89	134	54
South Atlantic.....	144	66	104	112	118	122	118	108	99	86
East South Central.....	145	138	163	143	163	138	157	84	111	84
West South Central.....	206	153	244	147	287	132	189	202	115	143
Mountain.....	26	79	52	18	26	26	96	18	26	62
Pacific.....	67	95	88	65	61	55	82	83	41	40

#### MEASLES CASE RATES

98 cities.....	90	107	113	142	118	162	128	194	127	181
New England.....	315	162	481	220	656	273	637	271	945	305
Middle Atlantic.....	82	69	111	85	89	85	79	87	66	70
East North Central.....	15	28	31	28	28	26	60	28	32	27
West North Central.....	13	649	27	953	46	1,077	25	1,416	50	1,277
South Atlantic.....	28	44	43	62	22	80	26	138	14	124
East South Central.....	35	66	35	155	17	299	52	275	17	323
West South Central.....	24	10	27	11	17	11	44	18	41	24
Mountain.....	1,236	262	757	53	899	150	740	167	339	229
Pacific.....	123	10	180	26	210	26	294	6	259	16

#### SCARLET FEVER CASE RATES

98 cities.....	155	174	179	202	222	224	214	234	167	222
New England.....	262	204	293	208	397	259	438	351	389	353
Middle Atlantic.....	147	148	155	178	199	186	202	208	205	190
East North Central.....	169	221	229	257	281	315	264	306	229	286
West North Central.....	117	139	161	198	143	209	138	279	126	246
South Atlantic.....	176	183	172	230	176	260	201	208	107	178
East South Central.....	122	215	128	299	250	377	157	197	157	341
West South Central.....	95	132	108	92	142	84	101	73	41	59
Mountain.....	191	229	218	141	261	211	261	300	113	379
Pacific.....	108	83	100	97	153	71	94	83	61	85

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.

<sup>2</sup> Shreveport, La., not included.

<sup>3</sup> South Bend, Ind., not included.

Summary of weekly reports from cities, November 22 to December 26, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 10, 1930	Dec. 26, 1931	Dec. 27, 1930
98 cities.....	2	8	5	7	4	14	5	9	4	7
New England.....	0	0	55	0	7	0	55	0	14	0
Middle Atlantic.....	0	0	1	0	0	0	0	0	0	0
East North Central.....	0	4	0	1	2	3	4	6	4	2
West North Central.....	11	68	4	48	13	122	4	48	10	43
South Atlantic.....	0	0	0	0	0	0	0	0	0	0
East South Central.....	6	0	0	0	0	0	0	0	0	0
West South Central.....	20	3	3	4	17	7	3	15	7	17
Mountain.....	0	35	0	106	0	150	0	115	0	35
Pacific.....	6	8	10	10	10	6	2	10	8	20

## TYPHOID FEVER CASE RATES

98 cities.....	7	10	7	10	9	8	5	8	6	7
New England.....	2	12	5	7	10	19	7	10	2	2
Middle Atlantic.....	4	3	5	8	6	6	5	3	4	3
East North Central.....	5	4	4	10	3	7	1	9	12	12
West North Central.....	8	8	4	6	6	6	0	8	4	6
South Atlantic.....	31	32	16	18	32	4	10	12	14	16
East South Central.....	6	12	12	12	17	18	23	36	12	18
West South Central.....	7	70	27	26	34	22	34	26	44	0
Mountain.....	0	9	26	9	0	0	0	9	0	9
Pacific.....	2	6	10	10	6	6	2	6	4	6

## INFLUENZA DEATH RATES

91 cities.....	7	9	7	9	8	9	8	10	9	11
New England.....	0	2	2	5	5	5	5	2	7	2
Middle Atlantic.....	9	11	4	6	8	7	6	5	7	10
East North Central.....	5	7	6	8	3	5	6	10	5	7
West North Central.....	3	0	6	12	6	21	6	15	3	9
South Atlantic.....	6	10	6	20	12	24	12	20	12	24
East South Central.....	13	26	38	13	26	26	6	32	32	19
West South Central.....	17	14	7	34	7	11	17	23	24	32
Mountain.....	26	26	9	18	35	9	17	18	70	0
Pacific.....	7	7	19	2	14	7	14	10	7	17

## PNEUMONIA DEATH RATES

91 cities.....	86	109	89	99	98	106	106	111	101	126
New England.....	99	77	91	73	67	119	111	116	94	119
Middle Atlantic.....	98	118	95	101	108	104	116	127	101	126
East North Central.....	52	78	56	77	66	80	63	69	78	94
West North Central.....	106	93	88	132	112	150	103	96	118	117
South Atlantic.....	122	180	146	164	140	134	142	138	182	174
East South Central.....	107	136	95	165	113	123	120	110	113	149
West South Central.....	66	153	135	128	104	162	142	185	131	189
Mountain.....	122	229	122	182	87	159	200	220	226	194
Pacific.....	74	70	77	60	130	60	122	127	89	135

<sup>1</sup> Shreveport, La., not included.

<sup>2</sup> South Bend, Ind., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended December 19, 1931.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 19, 1931, as follows:

Province	Influenza	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....				
Nova Scotia.....	5			1
New Brunswick <sup>1</sup> .....				
Quebec.....	1	6		9
Ontario.....		1		14
Manitoba.....				3
Saskatchewan.....			10	
Alberta.....			9	
British Columbia.....				2
Total.....	6	7	19	29

<sup>1</sup> No case of any disease included in the table was reported during the week

*Quebec Province—Communicable diseases—Week ended December 19, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 19, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	107	Poliomyelitis.....	6
Diphtheria.....	51	Puerperal septicemia.....	1
Erysipelas.....	1	Rabies.....	1
German measles.....	4	Scarlet fever.....	70
Influenza.....	1	Tuberculosis.....	42
Measles.....	231	Typhoid fever.....	9
Mumps.....	32	Whooping cough.....	47

*Ontario—Communicable diseases—Comparative—Four weeks ended November 28, 1931.*—Certain communicable diseases were reported in the Province of Ontario, Canada, for the four weeks ended November 28, 1931, and the corresponding period of the year 1930, as follows:

Disease	1930		1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	2	2	5	3
Chancroid.....	3			
Chicken pox.....	1,365		708	
Conjunctivitis.....			1	
Diphtheria.....	459	17	328	12
Dysentery.....		5	1	
Erysipelas.....	1		1	
German measles.....	31		9	
Gonorrhea.....	501		251	
Influenza.....	12		8	1
Jaundice.....	1		14	
Lethargic encephalitis.....	105		3	3
Measles.....	105		1,080	
Mumps.....	595		426	
Paratyphoid fever.....	5		5	
Pneumonia.....		153		120
Polomyelitis.....	80	11	18	2
Puerperal septicemia.....			1	
Scarlet fever.....	621	1	411	1
Septic sore throat.....	6	1	41	3
Smallpox.....	62		13	
Syphilis.....	354		171	1
Tetanus.....		1		1
Tuberculosis.....	209	51	152	33
Tularaemia.....			2	1
Typhoid fever.....	73	8	101	3
Undulant fever.....	5		10	1
Whooping cough.....	370	1	596	

## CHINA

*Hong Kong—Diphtheria.*—According to a recent report, diphtheria was epidemic in Hong Kong, China, in December, 1931, 99 cases with 3 deaths having been reported during the month. The majority of the cases reported were among adult Europeans. It is thought that the epidemic, which was said to be almost under control, may be of milk origin.

## CZECHOSLOVAKIA

*Communicable diseases—October, 1931.*—During the month of October, 1931, certain communicable diseases were reported in the Republic of Czechoslovakia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	10		Puerperal fever.....	35	15
Cerebrospinal meningitis.....	13	5	Scarlet fever.....	2,201	34
Diphtheria.....	3,170	143	Trachoma.....	218	
Dysentery.....	59	10	Typhoid fever.....	627	45
Malaria.....	9		Typhus fever.....	18	1
Paratyphoid fever.....	16	2			

## DENMARK

*Communicable diseases—October, 1931.*—During the month of October, 1931, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	7	Paratyphoid fever.....	113
Chicken pox.....	6	Poliomyelitis.....	3
Diphtheria and croup.....	327	Puerperal fever.....	23
Erysipelas.....	318	Scabies.....	887
German measles.....	2	Scarlet fever.....	188
Gonorrhea.....	949	Syphilis.....	98
Influenza.....	5,480	Tetanus.....	5
Lethargic encephalitis.....	3	Typhoid fever.....	6
Measles.....	1,553	Undulant fever (Bac. abort. Bang).....	49
Mumps.....	122	Whooping cough.....	2,308

## TRINIDAD

*Port of Spain—Vital statistics—November, 1930, 1931.*—The following statistics for the months of November, 1930 and 1931, are taken from a report issued by the public health department of Port of Spain, Trinidad:

	1930	1931		1930	1931
Number of births.....	150	160	Death rate per 1,000 population.....	16.4	16.1
Birth rate per 1,000 population.....	34.3	29.3	Deaths under 1 year.....	22	15
Number of deaths.....	91	93	Deaths under 1 year per 1,000 births.....	115.8	88.8

## UNION OF SOUTH AFRICA

*Vital statistics—1930.*—According to the annual report of the Department of Public Health of the Union of South Africa for the fiscal year ended June 30, 1931, the birth, death, and infant mortality rates, and the death rates from certain types of diseases in the Union during the year 1930 were as follows:

Death rate per 1,000 population.....	9.68
Birth rate per 1,000 population.....	26.43
Infant mortality rate per 1,000 live births.....	66.81
Death rate per 100,000 population from—	
Cancer.....	82.62
Diseases of heart and circulatory system.....	132.33
Pneumonia and bronchitis.....	112.87
Tuberculosis (all forms).....	46.76

*Diseases reported during year ended June 30, 1931.*—During the year ended June 30, 1931, cases of certain diseases were reported in the Union of South Africa as follows:

Disease	Cases	Disease	Cases
Anthrax.....	29	Poliomyelitis.....	25
Cerebrospinal meningitis.....	404	Puerperal fever and sepsis.....	309
Diphtheria.....	1,629	Rabies.....	3
Erysipelas.....	305	Scarlet fever.....	1,464
Gonorrheal ophthalmia.....	60	Smallpox.....	31
Lead poisoning.....	7	Trachoma.....	25
Leprosy.....	77	Tuberculosis.....	6,148
Lethargic encephalitis.....	16	Typhoid fever.....	4,793
Ophthalmia neonatorum.....	386	Typhus fever.....	1,541
Plague.....	71	Undulant fever.....	3













Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	No. of cases, 1931
British East Africa (see also table above):						
Kenya.....	154	484	235	14	64	---
Ecuador:						
Alamor Parish—Los Hoyos.....	C					
Amatuzá Parish—Cangochapa.....	C					
Calvas Canton.....	C					
Carlanmanga.....	C					
Overjencia.....	C					
Celinda Canton—Choras.....	C					
Loja Canton—	C					
La Paz.....	C					
Namuro.....	C					
Paterillo.....	C					
Tuburo.....	C					
Pallas Canton—San Antonio.....	C					
Indo-China.....	C					
Madagascar (see also table above):						
Ambostrá Province.....	C					
Antsirabe Province.....	C					
Miarinarivo Province.....	C					
Madagascar (see also table below):						
Tamatave.....	C					
Morocco.....	C					
Peru (see table below):						
Senegal (see table below):						
Siam.....	C					
Spain: Hospitalet—Barcelona Province.....	C					
Syria: Beirut.....	C					
Tunisia: Tunis.....	C					
Union of South Africa:						
Cape Province—Plague-infected rats.....	C					
Orange Free State.....	C					
Madagascar—Continued						
Noramanga Province.....	C					
Tananarive Province.....	C					
Peru.....	C					
Callao—Plague-infected rats.....	C					
Senegal:						
Baol.....	C					
Dakar.....	C					
Diourbel.....	C					
Louga.....	C					
Rufisque.....	C					
Thies.....	C					
Tivaouane.....	C					

1 Reports incomplete.





















UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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SPECIAL ARTICLES

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Prevalence of Communicable Diseases in the United States  
A Study of the Occurrence of Brucella Infection in Iowa  
Final Report on a Rat-Flea Survey of San Juan, P. R.



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON 1932



## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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# PUBLIC HEALTH REPORTS

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JANUARY 22, 1932

NO. 4

## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES<sup>1</sup>

December 6, 1931–January 2, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports, under the section entitled "Prevalence of disease."

*Measles.*—Reports indicated a continued seasonal increase in measles during the current period. The rate has been slightly higher since the beginning of the rise than it was during the corresponding period of last year, but for the present 4-week period the number of cases (14,298) was lower than that for any of the years from 1926 to 1929, inclusive. The disease continued most prevalent in the Atlantic Coast regions. The New England and Middle Atlantic groups reported 9,545 cases for the current period, as compared with 4,487 for the same period in 1930 and 3,813 in 1929; the South Atlantic States reported 1,318 for the current period as against 579 for the corresponding period in 1930 and 560 in 1929. All other regions showed decreases ranging from 9 per cent in the Mountain and Pacific group to 81 per cent in the South Central group.

*Poliomyelitis.*—The incidence of poliomyelitis declined more than 60 per cent during the month of December. In relation to the two preceding years the number of cases (266) was about 80 per cent of the number reported for the corresponding period last year, but it was still more than twice the number reported in 1929. In the New England and Middle Atlantic States the incidence (109 cases) was still considerably in excess of that for the corresponding period in the two preceding years, 58 cases being reported for this period in 1930 and 31 cases in 1929. All other regions either approximated last year's figure or showed very significant decreases. With one exception, the South Atlantic, all regions reported a higher incidence of the disease in 1931 than in 1929.

*Scarlet fever.*—For the country as a whole, the scarlet fever incidence, although showing the usual seasonal rise, was approximately the same as that for the corresponding period last year and was about 10 per cent below that for 1929. A comparison of geographic areas

<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The number of States included for the various diseases are as follows: Typhoid fever, 27; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

shows that the disease was slightly more prevalent in the North Atlantic, South Central, and Mountain and Pacific groups than at the same time last year, but the other groups reported decreases as follows: East North Central, 9 per cent; West North Central, 22 per cent; South Atlantic, 18 per cent.

*Meningococcus meningitis*.—The relatively low incidence of meningococcus meningitis which has prevailed throughout the entire year was maintained during the 4-week period ended January 2. In fact, the number of cases reported (280) was the lowest reported for the corresponding period in four years. All regions shared in this favorable situation. For the second time since the beginning of 1931 the number of cases reported for a 4-week period from the South Atlantic States fell below the number reported for the corresponding period in both 1930 and 1929.

*Typhoid fever*.—The reported incidence of typhoid fever (1,173 cases) for the current period represented a drop of about 40 per cent since the preceding 4-week period—a normal rate of decline for the season. The incidence compared very favorably with the incidence (1,266 cases) during the same period in 1930, but was about 40 per cent in excess of the incidence in 1929. The only regions showing increases over last year were the South Atlantic and South Central; the increase over 1929 was participated in by all regions except the West North Central and Mountain and Pacific sections. In the former group the number of cases reported for the current period was 56, as compared with 71 cases for the same period in 1930 and 81 cases in 1929. The Mountain and Pacific group reported 80 cases for the current period, as against 95 for the same period in 1930 and 100 cases in 1929.

*Diphtheria*.—Although the usual seasonal decrease of diphtheria was apparent in all parts of the country, the number of cases (7,246) for the current period was still about 22 per cent in excess of the number reported for the same period last year. Diphtheria maintained a very low level during the year 1930, and the current incidence is considerably below the years preceding 1930. Since the beginning of the seasonal rise in October, 1931, all regions except the New England and Middle Atlantic have reported more cases of diphtheria in each 4-week period than occurred during the corresponding periods last year. In the New England and Middle Atlantic States the numbers of cases for the current period and for several preceding 4-week periods have averaged about 80 per cent of the numbers for the same periods last year and about 50 per cent of the cases in 1929. In the South Central States the disease has been considerably more prevalent than in either of the years 1930 or 1929.

*Influenza*.—The number of cases of influenza reported for the 4-week period ended January 2 was 3,554, representing a decrease of about 25 per cent from last year's figure for the same period and a

50 per cent decrease from the number of cases reported in 1929. A decrease in the number of cases was reported from all sections except the far western group of States. There, while the number of cases was not large (662), it was almost twice the number reported for the corresponding period in 1930, and represented an increase of about 60 per cent over the same period of 1929.

*Smallpox.*—The number of cases of smallpox (1,238) reported for the current period was the lowest recorded for the corresponding period in six years. All regions showed significant decreases except the New England and Middle Atlantic. In those regions the disease has been unusually prevalent for the past few months, but it has been confined mostly to the States of Vermont, Connecticut, and New York. Out of a total of 166 cases for the entire region, those States reported all except 2 cases, the numbers for the individual States being 52 cases, 61 cases, and 51 cases, respectively.

*Mortality, all causes.*—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, was 11.4, which was still the lowest rate in six years for the corresponding period.

## A FURTHER STUDY OF BRUCELLA INFECTION IN IOWA

By A. V. HARDY, *Acting Assistant Surgeon, United States Public Health Service, Associate Professor of Hygiene and Preventive Medicine, University of Iowa College of Medicine*; C. F. JORDAN, *Acting Assistant Surgeon, United States Public Health Service, Assistant Professor of Preventive Medicine, University of Iowa College of Medicine*; and I. H. BORTS, *Chief Bacteriologist of the Laboratories of the Iowa State Department of Health*

The data here presented have been collected during the 12 months immediately following the period covered by our last report<sup>1</sup> (March 1, 1930, to March 1, 1931). Field investigations were discontinued early in 1930, hence the information obtained in this report was elicited chiefly by correspondence. With the further cooperation of the Iowa State Department of Agriculture the serological testing of animals has been continued and extended. Significant data have also been obtained through the bacteriological study of animals suspected of being the source of human infections. The evidence, considered as supplementary to our earlier report, is offered with little comment.

### PREVALENCE

Positive agglutination tests have been obtained during the 12-month period on blood specimens from 156 new cases. This represents a distinct decrease in comparison with the preceding year, and

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<sup>1</sup> The observations on which this paper is based were made with the support and under the auspices of the Iowa State Department of Health and the department of preventive medicine of the Iowa State University, aided by a grant from the committee on research of the American Medical Association.

is probably accounted for partly through a loss of that interest in the disease which was stimulated by our field studies and partly through an increase in the number of agglutination tests performed by the private and city laboratories. The evidence, however, again justifies the assertion that the graver forms of the disease are of infrequent occurrence and that as a general health hazard undulant fever is of relatively minor importance.

#### DISTRIBUTION

Most of the cases occurred sporadically. In one instance three appeared to have a common source in one dairy herd. In another the probable source of two cases was a dairy regarded as being responsible for two previous human infections.

#### OCCUPATION

In 113 cases the physicians responded to our request for data by completing more or less fully, our report forms. The occupations were as follows: Farmers, 51 (46 per cent); farmers' wives, 9 (8 per cent); packing-house employees, 6 (5.5 per cent); butcher, 1 (1 per cent); stock buyer, 1 (1 per cent); laborers, professional or business men, 28 (25 per cent); housewives, 10 (9 per cent); and school children 5 (4.5 per cent).

#### SEX

There were 89 (79.5 per cent) males and 23 (20.5 per cent) females. Of 40 cases reported as having had no contact with livestock, 23 (57.5 per cent) were males and 17 (42.5 per cent) were females.

#### AGE

The distribution by age groups of the cases in which this information was recorded is shown in Table 1.

TABLE 1—*Distribution of cases by age groups*

Age (years)	Total	Males	Females	Age (years)	Total	Males	Females
0-4.....	0	0	0	45-49.....	9	6	3
5-9.....	0	0	0	50-54.....	5	2	3
10-14.....	4	4	0	55-59.....	5	1	4
15-19.....	8	8	0	60-64.....	5	3	2
20-24.....	9	7	2	65-69.....	0	0	0
25-29.....	16	15	1	70-74.....	0	0	0
30-34.....	18	16	2	75-79.....	2	1	1
35-39.....	12	9	3				
40-44.....	9	9	0	Total.....	102	81	21

## SEASONAL DISTRIBUTION

The number of cases having their onset during the months of December, January, and February is considerably below the average for the other months. Whether this is dependent upon an actual seasonal variation in incidence or upon a seasonal variation in the accuracy of diagnosing undulant fever is still a matter for speculation.

## SOURCE OF INFECTION

As in the previously reported series, these cases have been studied in three groups: (a) Those without direct contact with livestock or carcasses, (b) rural residents having had direct contact with livestock, and (c) urban residents with direct contact with livestock or carcasses. The data concerning the distribution by sex and occupation correspond essentially with the previously reported cases, as does also the information concerning diet. The serological findings on the animals directly or indirectly related to these infections are of particular importance. These are summarized in Tables 2 and 3. The classification of the herds and of individual reactions as positive, doubtful, or negative corresponds with that used in our earlier report. Related to each herd of hogs and to each herd of cattle in Group B, there was one human infection. However, in investigating the 27 cases of undulant fever in Group A (Table 2), 34 herds of cattle were tested. Four of the patients obtained dairy products from more than one herd, but all animals related to one case were considered together.

TABLE 2.—Results of serological studies of dairy cattle

Group	Classification of herds	Number of related cases of undulant fever	Number of animals tested	Serological findings		
				Positive	Doubtful	Negative
A. Herds related to patients having no direct contact with livestock.	Positive...	20	556	177	47	332
Do.....	Doubtful...	1	6		1	5
Do.....	Negative...	6	13			13
Total.....		27	575	177	48	350
B. Herds related to patients having direct contact with livestock.	Positive...	19	217	85	16	116
Do.....	Doubtful...	6	36		10	26
Do.....	Negative...	15	123			123
Total.....		40	376	85	26	265
Grand total.....		67	951	232	74	645

A comparison of the results of tests on the herds in Groups A and B is instructive. In Group A there were positive herds related to 20 cases; in Group B, to 19 cases. In Group A only doubtfully reacting or negative herds were found to account for seven human infections.



Of the six herds recorded as negative, in four but one cow was examined. It is possible that this was a suspected animal rather than an only one, or was merely the source of most of the milk used by the patient. In Group B the raw dairy products were derived exclusively or almost exclusively from a herd owned by the family directly affected by undulant fever. The owners, therefore, were concerned in having all animals examined; yet in 15 instances the dairy herds were entirely negative, and in 6 only doubtful reactors were found. Where the patients have had direct contact with the usual livestock on an Iowa farm, serological evidence points to cattle as a probable source of the infection in only about one-half of the cases; but where the patients have had no direct contact with livestock, a thorough examination of the dairy herds concerned usually reveals positive reactors.

A similar comparison is particularly striking when hogs are considered. In Table 3 (Group A) it is noted that in no instance were definitely positive hogs found on the same farms as the dairy herds supplying milk or cream to patients having no direct contact with livestock. Where the patient had direct contact (Group B), more than one-half of the herds of hogs proved to be positive. Hogs, therefore, must be given serious consideration as the source of infection among Iowa farmers.

TABLE 3.—Results of serological studies of hogs

Group	Classification of herds	Number of related cases of undulant fever	Number of animals tested	Serological findings		
				Positive	Doubtful	Negative
A. Hogs on the same farms as the dairy herds, related to patients having no direct contact with livestock.	Positive...	0	0	0	0	0
Do.....	Doubtful	2	9	-----	4	5
Do.....	Negative..	9	59	-----	-----	59
Total.....		11	68	0	4	64
B. Hogs related to patients having direct contact with livestock.	Positive...	16	175	38	18	119
Do.....	Negative..	14	111	-----	-----	111
Total.....		30	286	38	18	230
Grand total.....		41	354	38	22	294

In 30 instances in which there had been direct contact with both cattle and hogs, the herds concerned were tested serologically. On three farms positive cattle and hogs were found; on two farms all animals were negative. In 10 instances cattle were positive and hogs negative, and in 11 instances hogs were positive and cattle negative. In one instance there were positive cattle and doubtful hogs; in two, doubtful cattle and positive hogs; in one, doubtful cattle and negative hogs. Again, these findings indicate that cattle and hogs

are of about equal importance as the source of *Brucella* infections among Iowa farmers. The evidence, supported by the bacteriological studies here reported, seems also to justify the opinion that the transmission of infection from hogs to cattle or cattle to hogs is unusual, if it occurs at all.

As in our earlier study we found that the urban cases having direct contact with livestock or carcasses (Group C) were men employed in the hog division of packing plants.

In Iowa, therefore, cattle appear to be responsible for more than half of the human infections with *Br. melitensis*. However, since the disease of porcine origin is of greater severity, hogs and cattle in this locality are of equal significance as a source of undulant fever morbidity.

#### BACTERIOLOGICAL STUDIES

During the year we have obtained from the blood cultures of 19 patients 20 additional strains of *Brucella*. These, classified as previously described, include 10 porcine strains, 9 bovine, and 1 *melitensis*. Concerning two cases, one of which yielded a bovine and one a porcine strain, significant data have not been obtained. Jordan and Borts (2) have reported in full the case from which a bovine and a *melitensis* strain were isolated. Two porcine organisms were isolated from the employees of packing plants. Each of these men had contact with hogs only. Two bovine strains were obtained from individuals having no contact with livestock. The remaining 12 strains were obtained from farm residents who had contact with both cattle and hogs. In four of the five instances in which a bovine strain was concerned, animal examinations were made. In all, the cattle were found to be positive; in two, hogs were found to be negative, in one of which a doubtfully reacting hog was found, while in the other no hogs were examined. Also, in four of the seven instances in which the porcine strain was concerned animal examinations were carried out. In each instance no reacting cattle were found. In three of the cases positively reacting hogs were present, and in the fourth no hogs were examined.

Bacteriological studies of positive dairy herds have, during the past year, been much more extensive than previously. In our earlier reports we recorded the isolation of *Brucella* from dairy products in three cases. In the study of the past year 34 additional strains have been obtained. Some of these are related to the cases previously reported; hence a summary of all the bacteriological findings on livestock is included.

From the milk of animals in dairy herds suspected of being the source of 14 cases of undulant fever we have isolated 28 strains of *Brucella*. Single tests only were done on a total of 44 positively reacting cows. The 9 additional strains were obtained from 12

positively reacting animals from herds which were not the suspected source of any known cases of undulant fever. In three instances a serologically positive herd yielded negative bacteriological results. The sale of reacting cows may well account for these findings, as in 1 of the 3 herds the 1 positive animal had been sold, and bacteriological studies on the 2 doubtful reactors proved to be negative; and in the other 2 instances only 1 of 3 and 2 of 5 positively reacting cows could be tested. All strains isolated from cattle have the characteristics of the *abortus* type of *Brucella melitensis*. As yet we have not been successful in obtaining for examination the milk from cattle on a farm where both positively reacting cattle and hogs were found, nor have we attempted any bacteriological studies on hogs.

Particularly significant are the three cases in which organisms have been obtained from a human case and from the animals suspected of being the source of that infection. In each case the type of organism isolated from the human source corresponded with the organisms obtained from the suspected animal; all were of the bovine variety. Epidemiological notes on these three cases are as follows:

*Case 1.*—W. D., male, aged 29, farmer. During July, August, and September of 1929 patient suffered a relatively mild attack of undulant fever. Blood drawn during the third week of illness agglutinated *Br. melitensis* var. *abortus* in a 1:320 dilution and culturally yielded *Br. melitensis* var. *abortus*. On the farm there was a herd of 27 cows. During the year preceding the patient's illness one cow had aborted and two had retained placentae. Nine of the cows were serologically positive and one was doubtful. Milk specimens from four of the positive reactors were shipped to the laboratory. By guinea-pig injection *Br. melitensis* var. *abortus* was isolated from one of these. This patient reported that he drank no milk, used very little cream, and purchased creamery butter prepared from pasteurized cream. He stated that prior to his illness he had cut his hand, but continued with his usual work and regularly milked, among other cows, the cow which had aborted.

*Case 2.*—A. B., male, aged 34, farmer. During May and June, 1930, patient was moderately ill with undulant fever. Blood drawn at the end of the second week agglutinated *Br. melitensis* in a titer of 1:640. A blood culture was received one week later. On the fifth subculture, made on the twentieth day of incubation, growth was obtained on the culture placed in the atmosphere containing 10 per cent CO<sub>2</sub>, but not on the one incubated in the unmodified atmosphere. The growth was identified as *Br. melitensis* var. *abortus*. On the farm there were 15 cows and a large herd of hogs. There had been sporadic abortions among both cows and sows. All of the former and 21 of the latter were tested serologically. Three cows were positive and one reacted doubtfully. All hogs were negative. Cream from the milk of the three positive cows was inoculated into guinea pigs. *Br. melitensis* var. *abortus* was isolated from one. Patient stated that he used no milk or cream, but ate freely of homemade butter. He also cared for the cattle and aided with the milking.

*Case 3.*—G. L., male, patient in a tuberculosis hospital. He was admitted to the sanatorium during July, 1928, with a moderately advanced pulmonary tuberculosis. He improved satisfactorily and for several weeks prior to our study had been afebrile. During March, 1930, blood agglutination tests were performed on 138 patients in the hospital. The serum of G. L. agglutinated *Br. melitensis* in a

titer of 1:160. A blood culture was then obtained and from this *Br. melitensis* var. *abortus* was isolated. The patient stated that he felt well and was not found to have any evening elevation of temperature. Milk was supplied by the hospital herd. Of 65 cows, 33 were serologically positive. Milk samples from 8 positives were obtained, and from 7 of these *Br. melitensis* var. *abortus* was isolated. The patient had had no contact with these cows and no recent contact with any animals. He drank a large amount of raw milk from this herd. A repetition of the agglutination tests on this patient one and three months after the first examination gave titers of 1:80 and 1:40, respectively.

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## FINAL REPORT ON A RAT-FLEA SURVEY OF SAN JUAN, PORTO RICO

By A. L. CARRIÓN, *Department of Health of Porto Rico*

We (1) (2) (3) have already presented the annual results of three consecutive years of work on a rat-flea survey of San Juan, Porto Rico. This survey was carried out by the Bureau of Plague Prevention of the Insular Health Department with the cooperation of the United States Public Health Service. The present report has been prepared as a general summary of that work taken as a whole.

Activities were initiated on July 11, 1926, and were continued till June 30, 1929. During this period cage traps were distributed at the rate of 205 per day among 39 premises. Rats were obtained from only 1.8 per cent of the localities trapped, and it is estimated that a proportion of 4.2 rodents were caught per thousand traps set.

The total number of live rats captured reached 1,005. Of these, 800 were adults and 205 either young or partially grown. The number of females exceeded that of males by 119. About 30 per cent of the females, or 168, were found pregnant bearing an average of 7.5 embryos each. The highest number of embryos observed in a single animal was 11.

Table 1 shows the distribution of the rats by zones:

TABLE 1.—Rats captured in different zones

Year	Zone 1 (docks)	Zone 2 (water front)	Zone 3 (com- mercial)	Zone 4 (resi- dential)	Total
1926-27.....	140	77	20	123	360
1927-28.....	151	58	29	153	390
1928-29.....	93	28	60	68	249
Total.....	384	163	109	349	1,005

It will be seen that zones 1 and 4 supplied considerably higher numbers than zones 2 and 3. This was probably due to the fact that trapping was more active at the former locations.

Table 2 has been prepared to demonstrate the actual concentration of the species in the different zones. In this table, rat prevalence is represented by the average number of rats captured per 1,000 traps set.

TABLE 2.<sup>1</sup>—Comparative concentration of the species in different zones

	Zone 1 (docks)	Zone 2 (water- front)	Zone 3 (com- mercial)	Zone 4 (resi- dential)
Total traps set.....	83, 762	14, 673	33, 973	34, 625
Total rats captured.....	273	105	101	231
Average number of rats per 1,000 traps set .....	3.2	7	2.97	6.6

<sup>1</sup> The records available for this table cover almost, but not entirely, the 3-year period.

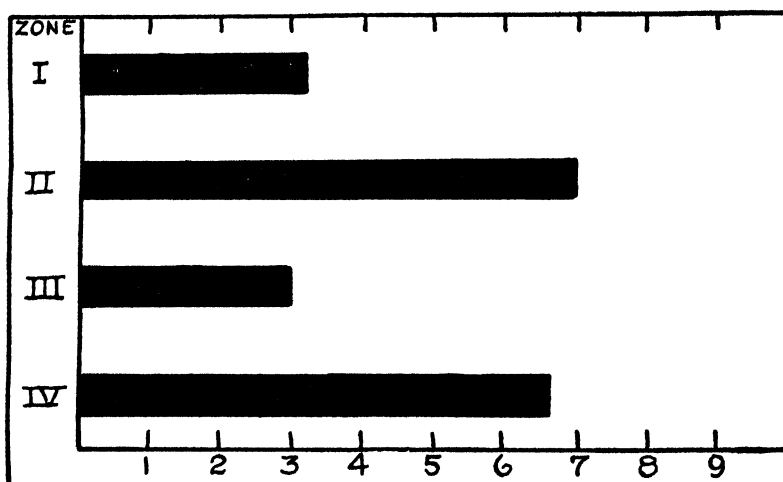


CHART 1.—Proportional concentration of rats in the four zones (average number of rats captured per 1,000 traps set)

According to this table the rat population of the city is shown to be more concentrated in the water front and residential sections, both of which show an index of approximately 7. In zones 1 and 3 the degree of infestation appears to be about half as great.

*Rattus norvegicus* has been the most prevalent species in practically all parts of the city, this variety alone representing about 72 per cent of the total catch. (See Table 3.) The remainder of the rodents consisted of *R. alexandrinus* and *R. rattus* in almost equal proportions. Chart 2 shows graphically the incidence of each species in the different zones.

Fleas were found on only 57 per cent of the rats captured, the total number of parasites collected reaching 7,145. Of these, 4,029 were males and 3,116 females, a ratio of 13:10. Classification re-

vealed the presence of five different species; but one of these alone, *Xenopsylla cheopis*, was found to represent 98.5 per cent of the total. (See Table 4.)

TABLE 3.—Classification of rats

Species	1926-27	1927-28	1928-29	Species, total	Species, percentage
<i>Rattus norvegicus</i> .....	287	296	140	723	72
<i>Rattus rattus</i> .....	41	45	49	135	13
<i>Rattus alexandrinus</i> .....	32	55	60	147	15
Total.....	360	396	249	1, 005	100

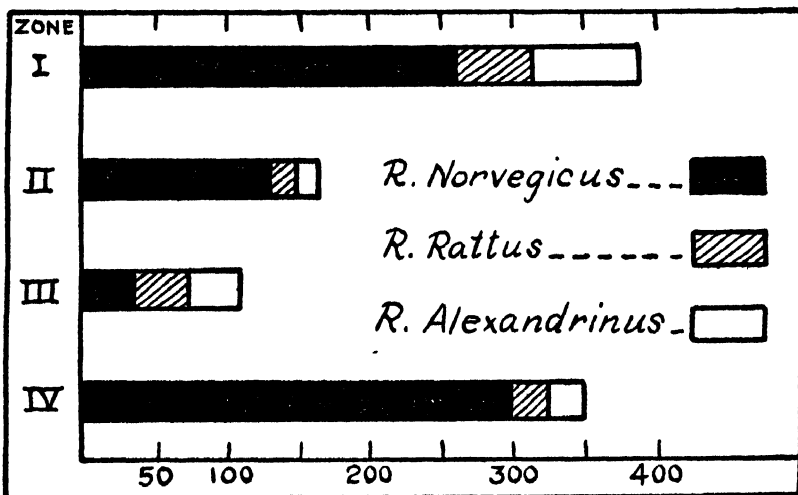


CHART 2.—Numbers and species of rats in each of the four zones

TABLE 4.—Tabulation of fleas as to species and sex

Species	Sex	1926-27	1927-28	1928-29	Total
<i>Xenopsylla cheopis</i> .....	Males.....	1, 472	1, 484	1, 055	4, 011
	Females.....	1, 067	1, 092	870	3, 029
<i>Echidnophaga gallinacea</i> .....	Males.....	4	1	5	10
	Females.....	31	18	34	83
<i>Ctenocephalus canis or felis</i> .....	Males.....	1	1	2	3
	Females.....	1	1	2	4
<i>Pulex irritans</i> .....	Males.....	1	1	1	3
	Females.....	1	2	1	3
<i>Leptopsylla muscull</i> .....	Males.....	1	1	1	3
	Females.....	1	1	1	3
Total.....		2, 575	2, 600	1, 970	7, 145

The highest number of fleas came from zone 1, the docks, which yielded 5,337 for the three years. Zone 4 furnished 793 specimens while the commercial and water-front districts followed with 630 and 385, respectively. (See Table 5.)

TABLE 5.—Fleas collected in different zones

Year	Zone 1 (docks)	Zone 2 (water front)	Zone 3 (com- mercial)	Zone 4 (resi- dential)	Total
1926-27.....	2, 014	212	123	226	2, 575
1927-28.....	2, 253	32	121	189	2, 600
1928-29.....	1, 065	141	386	878	1, 970
Total.....	5, 337	385	630	793	7, 145

As stated in a previous report, the absolute number of rat fleas collected does not always indicate the degree of infestation in a given region. Such conditions as the extent of the surveyed area, the number of rats examined for parasites and the length of time covered by the work will produce great variation in the total number of insects and may lead to false conclusions as to their actual rate of concentration among the local rats. At the present time flea prevalence is expressed in terms of fleas per rat. This ratio is generally known as the *flea index*. It is determined by dividing the number of fleas collected by the total number of rats examined, this being independent of all other conditions.

The *flea index* of San Juan, taken as a whole, has been estimated at 7.1, which is almost identical with the *cheopis index*, represented by 7. Table 6 records the index in the four zones considered separately, giving, in addition, the relative concentration of the rodents.

TABLE 6.—General summary of rat and flea conditions in the four zones

	Zone 1 (docks)	Zone 2 (water front)	Zone 3 (com- mercial)	Zone 4 (resi- dential)	Total
Total rats captured.....	384	163	109	349	1, 005
Average number of rats per 1,000 traps set.....	3.2	7	2.97	6.6	4.2
Total fleas collected.....	5, 337	385	630	793	7, 145
Percentage of rats with fleas.....	85.4	33.7	73.4	31.2	56.9
Fleas per rat.....	13.9	2.4	5.8	3.5	7.1

It is evident from the above table that a high rat infestation does not always imply a corresponding hyperabundance of fleas. In zone 2, for example, where the concentration of rodents appears to be highest (7 rodents per 1,000 traps set), the *flea index* is only 2.4. In zone 1, on the other hand, the flea index is very high, almost 14 per rat, while the rodent index is slightly higher than 3.

The highest number of fleas on a single animal was obtained from an adult, female, *R. alexandrinus*, trapped in a fertilizer warehouse (Nitrate Agencies) located in the water-front section of the city. This rodent had at least 303 parasites. It may be of interest to add that two other rodents yielding 124 and 111 fleas, respectively, were also captured in the water-front area.

Table 7 was prepared to determine any possible predilection of the insects for any particular species of rat.

TABLE 7.—Comparative study of flea index in different species of rats

	<i>Rattus norvegicus</i>	<i>Rattus rattus</i>	<i>Rattus alexandrinus</i>	Total
Total rats per species.....	723	135	147	1,005
Rats with fleas.....	345	112	115	572
Percentage of rats with fleas.....	47.7	82.9	78.2	56.9
Total fleas per rat species.....	4,889	1,130	1,426	7,145
Fleas per rat.....	6.3	8.4	9.7	7.1

Although the index is evidently high for the three varieties of rodents, the above data would seem to point to the species *Rattus*

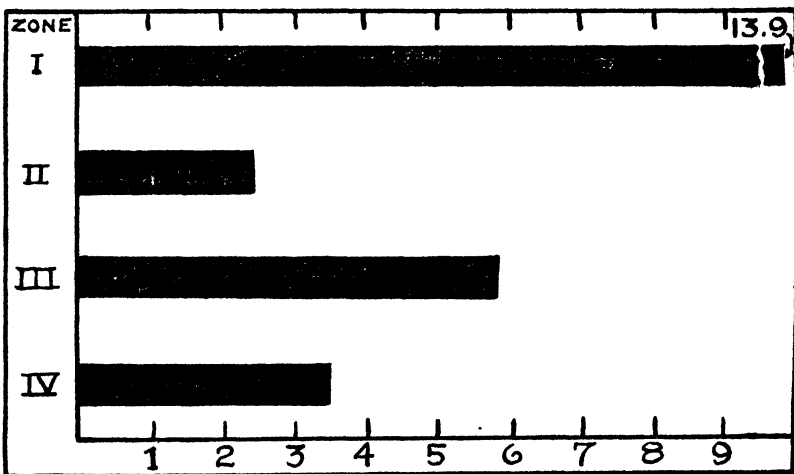


CHART 3.—Flea index in the different zones

*alexandrinus* and *Rattus rattus* as more desirable hosts. It must be admitted, however, that the number of rats examined is relatively too small and our field of observation too limited to warrant any final conclusion in this respect.

With a view to determining the relation of flea prevalence to atmospheric moisture and temperature, we have carried daily weather records which were kindly furnished at the end of each month by the office of the United States Weather Bureau at San Juan. These records, as well as the seasonal variations of the flea index for the three years, have been carefully tabulated in Charts 4 and 5. In plotting the curves for these charts it was deemed convenient to arrange the data by periods of three months.

As would be expected from our limited thermometrical changes, the temperature factor does not appear to have influenced flea prevalence in San Juan to any appreciable degree during this period. On



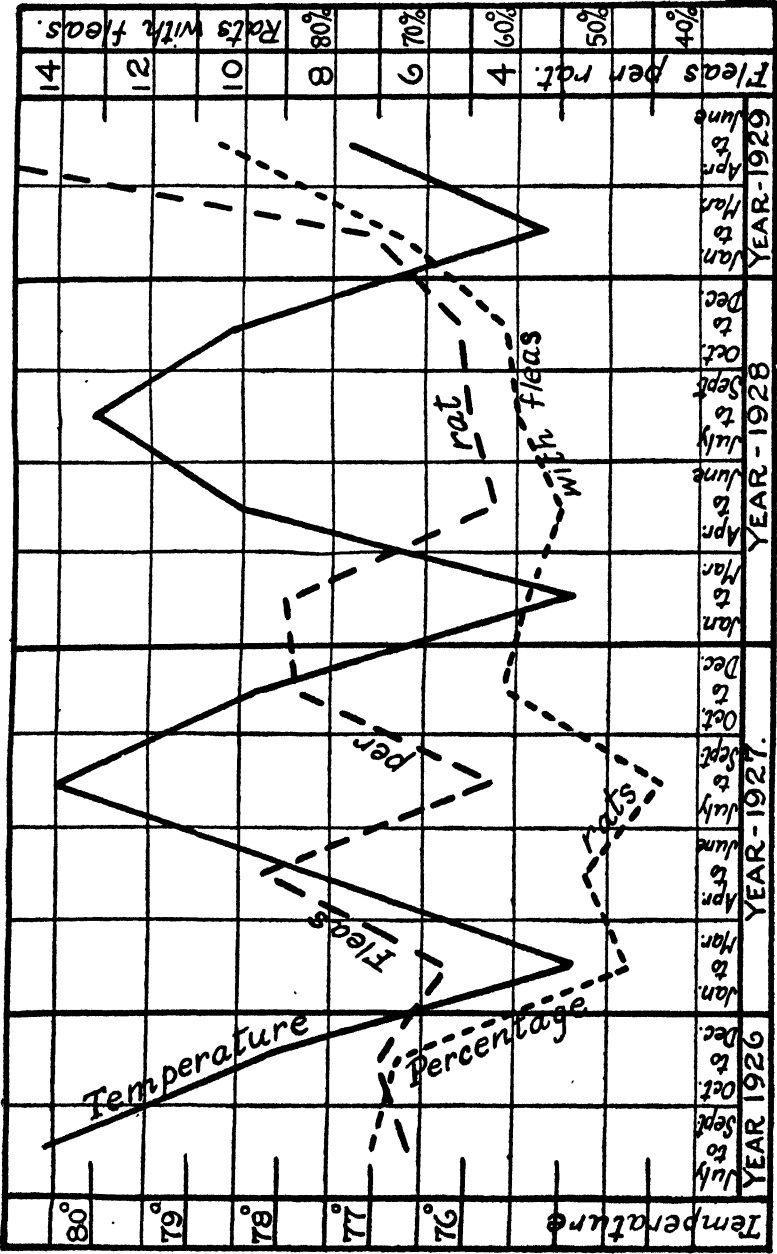


CHART 4.—Relation of temperature to flea prevalence

the contrary, a glance at Chart 5 will show, for most of the three years, a striking parallelism between the relative humidity curve and the line representing flea prevalence. The only marked deviation from this tendency took place toward the end of the survey during the months immediately following the cyclone of San Felipe. After the occurrence of this terrific phenomenon the whole city remained for some time under very abnormal conditions, our work was hindered in many ways, and there are several other reasons for considering the data for this period as rather unreliable. The favorable influence of a moist atmosphere on the different phases of flea breeding has been variously observed by different investigators. This particular weather condition is, indeed, one of the most important factors governing the prevailing degree of infestation in any given region. Our observations in San Juan, therefore, are only confirmatory.

#### SUMMARY

This survey includes three consecutive years of work. During this period a total of 1,005 live rats were captured. Of these, 72 per cent were classed as *Rattus norvegicus*, the rest of the rodents consisting of *Rattus rattus* and *Rattus alexandrinus* in proportions of 13 and 15 per cent, respectively. Fleas were obtained from almost 57 per cent of the animals, and their total number for the three years was 7,145, giving an index of 7.1 fleas per rat for San Juan. Five different species of fleas were encountered, but one of these alone, *Xenopsylla cheopis*, represented 98.5 per cent of the total catch. The concentration of rats is heaviest at the water front and residential sections, while the flea index is highest at the docks (almost 14 fleas per rat) and commercial district (almost 6 fleas per rat).

#### COMMENT

From a considerable amount of previous work the author is led to the conclusion that the rat population of San Juan is much greater than would be expected from the data here given. The present work, however, is thought to give a fair idea of the comparative concentration of rodents in different parts of the locality. So far as the flea findings are concerned, there is every reason to believe that they represent, in a general way, the true prevailing conditions in San Juan.

If zones 1 (docks) and 2 (water front) be considered as a single zone, and this is what they actually are topographically, this zone as a whole can evidently be declared more heavily infested with rats and fleas than any other portion of the city. It is important to add that *Rattus norvegicus* is the prevailing rat species in the community and that *Xenopsylla cheopis* is practically the only flea encountered. In other words, the rat and flea conditions at the water-front area (indeed,

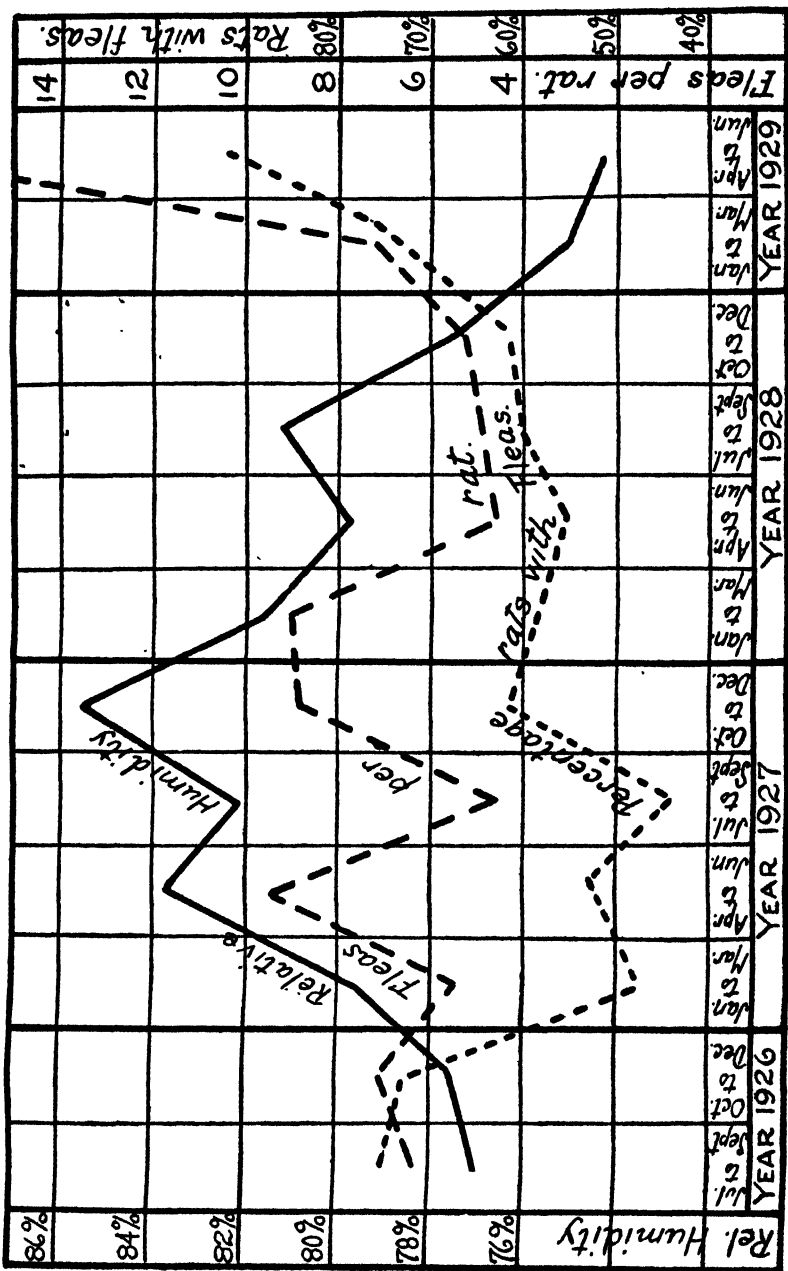


CHART 5.—Relation of atmospheric humidity to flea prevalence

all over the city) are particularly favorable for the development and spread of bubonic plague. This offers an explanation for the introduction of the disease into this port in 1912 and again in 1921, notwithstanding the most scrupulous precautionary measures taken by the United States Public Health Service at San Juan. Moreover, the fact that San Juan is frequently visited by ships stopping at the Canary Islands and other Mediterranean and South American ports where plague is often endemically or accidentally present, renders this city particularly exposed to future infections. Under such circumstances, permanent preventive measures at San Juan should be considered a fundamental and necessary public-health activity.

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### DEATH RATES IN A GROUP OF INSURED PERSONS

#### Rates for Principal Causes of Death for October, 1931

The accompanying table, taken from the Statistical Bulletin for November, 1931, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial insurance department of the company for October as compared with that for the preceding month and for the corresponding month of last year. It also gives the cumulative rates for the period January-October for the years 1930 and 1931. The rates are based on a strength of approximately 19,000,000 insured persons in the United States and Canada. In recent years the general death rate in this more or less selected group of persons has averaged about 72 per cent of the rate for the registration area of the United States.

The death rate for this group for October, 1931, was 7.8 per 1,000, the lowest rate recorded for this month, reached also in October, 1927. Diphtheria, influenza, and pneumonia showed the greatest seasonal increases over the rates for the preceding month, but all were lower than for October of last year.

The Bulletin states:

It may now be stated that new low mortality rates for tuberculosis, diphtheria, diarrheal diseases, and puerperal conditions are virtually assured. The per cent reductions in their mortality rates over the previous minimal figures are as

follows: For tuberculosis, 7.3; for diphtheria, 32.8; for diarrheal diseases, 23.0; and for puerperal conditions, 9.7. Inasmuch as the death rates for all have continued favorable up to November 21, it would require unprecedentedly high mortality in the case of any of them during the remaining weeks of the year to bring its death rate up to, or in excess of, the previous low point.

The probability that new high mortality rates would be registered in 1931 for certain diseases has also become a practical certainty with the closer approach of the end of the year. It may now be stated, beyond peradventure, that higher death rates than ever before will be registered for cancer, diabetes, heart disease, and automobile fatalities.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	October, 1931	Septem- ber, 1931	October, 1930	Cumulative, Janu- ary to October	
				1931	1930
Total, all causes .....	780.2	797.8	820.8	886.4	884.6
Typhoid fever .....	4.9	4.7	4.4	2.2	2.2
Measles .....	5	4	3	3.4	3.2
Scarlet fever .....	1.9	1.2	1.3	3.2	2.6
Whooping cough .....	3.3	4.1	2.7	3.6	4.6
Diphtheria .....	4.0	2.2	5.1	3.9	5.8
Influenza .....	5.2	4.5	6.8	22.4	14.9
Tuberculosis (all forms) .....	70.9	69.5	75.9	77.0	83.1
Tuberculosis of respiratory system .....	63.0	62.6	68.3	68.6	72.3
Cancer .....	79.7	79.4	83.4	82.3	78.2
Diabetes mellitus .....	18.4	17.8	17.1	20.6	18.6
Cerebral hemorrhage .....	55.7	55.9	56.4	61.2	60.4
Organic diseases of heart .....	125.8	129.7	132.1	148.7	145.5
Pneumonia (all forms) .....	41.3	32.2	47.1	76.5	76.7
Other respiratory diseases .....	8.4	7.6	9.3	10.5	11.2
Diarrhea and enteritis .....	27.0	32.5	39.0	16.4	21.3
Bright's disease (chronic nephritis) .....	58.4	61.2	62.7	66.3	68.3
Puerperal state .....	10.0	9.8	10.2	11.2	12.4
Suicides .....	10.0	10.4	10.1	9.8	9.7
Homicides .....	8.3	6.6	7.0	7.0	6.7
Other external causes (excluding suicides and homi- cides) .....	57.0	43.4	60.2	61.2	63.3
Traumatism by automobiles .....	25.4	25.7	23.7	21.5	20.5
All other causes .....	189.4	204.7	189.8	198.9	195.7

<sup>1</sup> All figures in this table include insured infants under 1 year of age. The rates for 1931 are subject to slight corrections, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Regulation restricting inspection of tuberculosis records upheld.*—(New York Supreme Court, Appellate Term; *McGowan v. Metropolitan Life Insurance Co. et al.*, 253 N. Y. S. 551; decided Nov. 5, 1931.) In an action brought by the beneficiary of a life insurance policy, the defendant company defended on the ground that the insured had made false representations regarding his health. In his application made in 1928, the insured denied that he had had any surgical operations, serious illness, or disease of the lungs; that he had been attended by a physician during the preceding five years; or that he had received treatment within that time in any dispensary, hospital, or sanitarium. The company asserted that it had learned

that the insured had pulmonary tuberculosis for several years before he applied for insurance and that he had been examined and had received clinical and hospital treatment at the hands of the New York City Health Department within the 5-year period preceding his application. The company accordingly applied for a subpoena directing the city health department to produce upon the trial all books and records showing the care, treatment, medical attendance, history, diagnosis, admission, discharge, and disposition, in the case of the insured, who died in 1929.

Section 1175 of the Greater New York Charter provided as follows:

The board of health may establish, as it shall deem wise and to promote the public good and public service, reasonable regulations as to the publicity of any of the papers, files, reports, records, and proceedings of the department of health; and may publish such information as may, in its opinion, be useful concerning births, deaths, marriages, sickness, and the general sanitary conditions of said city or any matter, place, or thing therein.

Pursuant to the authority thus granted, the board of health prescribed the following regulation:

A complete and adequate record shall be kept of every case of pulmonary tuberculosis examined or treated at a dispensary. The department of health may require, in its discretion, regular and uniform statistical reports relating to the examination, care, and treatment of all persons coming within the jurisdiction and control of such dispensary. Such records shall not be open to inspection by the public or to any person other than the representatives of the department of health of the city of New York and such persons as may be authorized by law to inspect such records.

The contention of the defendant company was that, since it was a party to the action, it was a person authorized by law to inspect the records in question, and hence the regulation did not forbid the granting of its motion. If, it contended, the regulation were construed otherwise, the department had exceeded its power under the charter and the rule was not a reasonable regulation but an unreasonable prohibition. The appellate term of the supreme court was of the opinion "that the mere fact that the applicant is a party to an action in which the records in question may be material or relevant to the issues does not make it a person authorized by law to inspect such records within the meaning of the regulation." "The purpose of the regulation," said the court, "was to forbid inspection by persons who, on general principles, might be entitled to inspect the records and to confine such inspection to persons who might be authorized by special provisions of law to make it." Neither did the court think that the regulation, so construed, was an unreasonable one. In this connection, it said:

\* \* \* The papers submitted by the department in opposition to the application show that some regulation of this sort is highly desirable in the public interest. Persons suffering from contagious or infectious diseases, includ-

ing sufferers from tuberculosis, must be assured of the greatest secrecy in dealing with their cases before their full cooperation with the public health authorities can be expected. The highly useful work of the department of health might be seriously interfered with to the prejudice of the community if its records in such cases were known to be subject to disclosure at the demand of any one having an interest in learning their contents.

## DEATHS DURING WEEK ENDED JANUARY 2, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended January 2, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Jan. 2, 1932	Corresponding week, 1931
Policies in force.....	74, 151, 074	74, 607, 778
Number of death claims.....	13, 832	12, 754
Death claims per 1,000 policies in force, annual rate...	9. 7	8. 9
Death claims per 1,000 policies, 53 weeks, annual rate.....	9. 6	9. 5

*Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended January 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Jan. 2, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for 53 weeks ended—	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	Jan. 2, 1932	Jan. 3, 1931
Total (82 cities).....	8, 256	12. 0	594	4. 48	13. 6	819	11. 8	11. 9
Akron.....	45	8. 9	6	59	6. 3	3	7. 6	7. 8
Albany <sup>3</sup> .....	28	11. 3	2	40	11. 4	2	14. 1	14. 7
Atlanta <sup>4</sup> .....	94	17. 7	8	79	20. 5	9	14. 9	15. 4
White.....	50	14. 1	4	60	15. 3	6	11. 5	11. 8
Colored.....	44	24. 6	4	115	31. 0	3	21. 6	23. 2
Baltimore <sup>5</sup> .....	247	15. 8	25	87	16. 1	24	14. 2	14. 0
White.....	189	14. 8	17	76	14. 8	17	12. 9	12. 7
Colored.....	58	20. 6	8	128	24. 3	7	19. 9	19. 7
Birmingham <sup>6</sup> .....	76	14. 7	10	100	16. 8	9	13. 0	13. 6
White.....	38	11. 9	6	102	10. 8	2	10. 6	10. 1
Colored.....	38	19. 3	4	98	26. 1	7	17. 9	19. 3
Boston.....	199	13. 2	14	40	18. 9	26	14. 1	14. 1
Bridgeport.....	35	12. 4	4	67	12. 4	4	11. 1	10. 9
Buffalo.....	144	12. 9	8	26	13. 8	25	12. 8	12. 9
Cambridge.....	19	8. 7	2	41	17. 4	1	12. 0	12. 0
Camden.....	37	16. 2	2	35	21. 1	6	14. 2	13. 4
Canton.....	22	10. 7	5	128	8. 9	1	9. 9	9. 8
Chicago <sup>4</sup> .....	733	11. 1	43	39	11. 5	59	10. 4	10. 4
Cincinnati.....	132	15. 1	12	72	14. 6	6	15. 6	15. 5
Cleveland.....	218	12. 5	17	50	11. 1	19	11. 0	11. 0
Columbus.....	81	14. 3	5	49	14. 5	9	13. 4	13. 3
Dallas <sup>6</sup> .....	40	7. 6	3	-----	12. 1	12	11. 6	11. 5
White.....	31	7. 2	2	-----	11. 8	9	9. 7	10. 6
Colored.....	9	9. 9	1	-----	13. 8	3	17. 2	16. 0
Dayton.....	43	9. 7	0	0	11. 5	1	10. 4	9. 7
Denver.....	107	19. 1	6	60	17. 2	14	13. 9	15. 0
Des Moines.....	29	10. 5	4	76	13. 5	3	11. 0	11. 6
Detroit.....	258	8. 1	31	49	8. 6	23	8. 1	9. 2
Duluth.....	14	7. 2	1	27	12. 3	1	11. 1	11. 6
El Paso.....	27	13. 4	3	-----	28. 4	16	14. 9	17. 3
Erie.....	35	15. 5	2	41	9. 0	2	16. 5	16. 9
Fall River <sup>7</sup> .....	20	9. 0	0	0	12. 7	5	11. 1	11. 5

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended January 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 2, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for 53 weeks ended—	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	Jan. 2, 1932	Jan. 3, 1931
Flint.....	26	8.3	4	50	9.6	5	6.8	8.9
Fort Worth <sup>4</sup> .....	32	10.0	5	-----	12.7	4	10.5	11.0
White.....	29	10.8	5	-----	13.3	3	10.1	10.5
Colored.....	3	5.8	0	-----	9.9	1	12.2	13.7
Grand Rapids.....	37	11.2	1	15	8.6	3	9.0	16.1
Houston <sup>4</sup> .....	86	14.5	5	-----	13.4	8	11.0	12.2
White.....	56	12.9	3	-----	12.7	5	10.2	10.8
Colored.....	30	18.8	2	-----	15.3	3	13.4	15.8
Indianapolis <sup>4</sup> .....	111	15.7	11	84	15.7	11	13.6	14.4
White.....	93	14.9	9	79	15.9	10	13.1	13.5
Colored.....	18	20.8	2	123	14.1	1	17.2	21.0
Jersey City.....	68	11.1	6	63	11.7	7	11.2	11.3
Kansas City, Kans. <sup>4</sup> .....	14	5.9	2	44	12.8	1	12.4	11.8
White.....	10	5.2	2	53	12.6	1	11.7	11.2
Colored.....	4	8.9	0	0	13.7	0	15.2	14.6
Kansas City, Mo.....	99	12.6	5	40	15.5	11	12.6	13.2
Knoville <sup>4</sup> .....	14	6.7	2	43	11.8	4	12.4	13.4
White.....	13	7.4	2	49	12.9	4	11.6	12.5
Colored.....	1	2.9	0	0	9.0	0	16.4	18.2
Long Beach.....	34	11.6	1	25	15.2	2	9.9	10.3
Los Angeles.....	323	12.8	12	35	14.4	23	10.8	11.2
Louisville.....	112	18.9	12	109	13.7	13	13.7	13.5
White.....	85	17.0	7	73	13.2	12	12.3	12.0
Colored.....	27	29.5	5	359	16.5	1	21.2	21.6
Lowell <sup>4</sup> .....	27	14.0	1	26	14.6	1	13.0	13.2
Lynn.....	28	14.2	1	29	11.7	0	9.5	10.5
Memphis <sup>4</sup> .....	68	17.7	15	160	22.4	15	16.3	16.9
White.....	49	16.0	10	108	16.3	9	13.3	13.3
Colored.....	19	20.6	5	145	32.3	6	21.2	22.8
Miami <sup>4</sup> .....	29	13.4	3	77	17.4	3	11.6	11.2
White.....	18	10.8	1	36	18.2	1	10.7	9.9
Colored.....	11	22.7	2	181	14.5	2	14.6	15.3
Milwaukee.....	82	7.2	8	36	7.9	11	9.0	9.6
Minneapolis.....	92	10.1	6	39	13.2	15	10.8	10.8
Nashville <sup>4</sup> .....	44	14.8	4	60	17.2	5	16.7	16.4
White.....	31	14.3	4	79	12.6	4	14.4	13.8
Colored.....	13	15.8	0	0	29.2	1	22.6	23.2
New Bedford <sup>4</sup> .....	26	12.0	1	26	14.4	4	12.0	11.1
New Haven.....	37	11.9	4	61	12.2	0	12.5	12.5
New Orleans <sup>4</sup> .....	146	16.3	12	67	23.2	26	16.5	17.5
White.....	73	11.4	5	42	19.0	15	13.5	14.5
Colored.....	73	28.3	7	116	33.6	11	24.0	25.0
New York.....	1,432	10.5	110	47	12.8	154	10.9	10.8
Bronx Borough.....	204	8.0	10	28	9.2	16	8.1	7.9
Brooklyn Borough.....	452	9.0	42	45	11.8	72	10.1	9.8
Manhattan Borough.....	577	16.6	46	61	19.3	49	16.4	16.0
Queens Borough.....	148	6.7	12	48	8.2	14	7.1	7.1
Richmond Borough.....	51	16.3	0	0	13.7	3	13.5	13.7
Newark, N. J.....	104	12.2	6	32	14.0	10	11.4	12.0
Oakland.....	77	13.7	3	38	15.1	4	10.9	11.1
Oklahoma City.....	47	12.5	6	84	11.4	3	10.6	10.9
Omaha.....	58	14.0	2	23	19.7	9	13.7	13.6
Paterson.....	44	16.5	4	68	10.5	0	13.1	12.0
Peoria.....	29	13.9	1	26	16.8	2	12.3	12.3
Philadelphia.....	463	12.3	28	41	13.2	46	12.8	12.6
Pittsburgh.....	142	11.0	12	42	16.9	20	14.1	13.9
Portland, Oreg.....	83	14.1	4	49	13.8	5	11.7	12.1
Providence.....	56	11.5	4	37	13.4	5	12.6	12.9
Richmond <sup>4</sup> .....	68	19.2	2	20	14.8	9	15.4	14.9
White.....	42	16.7	1	22	12.0	6	13.0	12.2
Colored.....	26	25.6	1	43	21.6	3	21.3	21.8
Rochester.....	63	9.9	3	28	13.3	5	11.7	11.5
St. Louis.....	197	12.4	11	40	16.3	8	14.6	14.0
St. Paul.....	48	9.1	4	41	11.3	3	10.3	10.1
Salt Lake City <sup>4</sup> .....	38	13.9	2	30	19.3	2	11.9	12.8
San Antonio.....	61	13.2	3	-----	15.6	11	14.1	15.8
San Diego.....	43	14.3	0	0	17.8	4	13.8	14.6
San Francisco.....	219	17.6	10	67	17.2	8	13.1	13.1
Schenectady.....	20	10.8	2	60	7.1	2	10.9	10.9
Seattle.....	73	10.2	2	20	13.2	4	11.4	11.0
Somerville.....	23	11.4	2	62	9.5	1	8.9	9.7

See footnotes at end of table.



*Deaths from all causes in certain large cities of the United States during the week ended January 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 2, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for 53 weeks ended—	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	Jan. 2, 1932	Jan. 3, 1931
South Bend.....	17	8.2	2	52	9.4	1	8.0	9.0
Spokane.....	23	10.3	1	26	15.3	3	12.3	12.4
Springfield, Mass.....	43	14.7	6	101	15.6	2	11.4	12.1
Syracuse.....	41	10.0	2	25	13.4	7	11.5	11.6
Tacoma.....	35	16.9	4	111	20.5	4	12.5	12.6
Toledo.....	70	12.3	1	9	11.6	4	11.7	12.6
Trenton.....	43	18.1	2	37	24.1	4	16.2	16.5
Utica.....	27	13.8	3	56	14.8	1	14.3	14.6
Washington, D. C. <sup>6</sup> .....	173	18.4	10	56	17.5	13	15.9	15.2
White.....	115	16.8	8	66	15.4	6	13.5	13.0
Colored.....	58	22.4	2	34	23.1	7	22.1	20.9
Waterbury.....	15	7.8	1	25	12.0	0	9.4	9.4
Wilmington, Del. <sup>7</sup> .....	35	17.1	1	23	14.7	3	13.8	14.5
Worcester.....	48	12.7	4	57	13.6	2	12.0	12.8
Yonkers.....	18	6.8	0	0	8.9	3	8.3	8.2
Youngstown.....	42	12.7	3	41	10.7	2	9.7	10.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 77 cities

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 20, and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

#### Reports for Weeks Ended January 9, 1932, and January 10, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 9, 1932, and January 10, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931
<b>New England States:</b>								
Maine.....	6	1	8	1	548	7	3	0
New Hampshire.....	5	3			27	21	0	0
Vermont.....		1			193	14	0	0
Massachusetts.....	69	83	4	18	429	630	0	2
Rhode Island.....	12	2	4		866	1	1	1
Connecticut.....	9	17	9	10	104	271	1	1
<b>Middle Atlantic States:</b>								
New York.....	104	125	26	438	773	376	15	17
New Jersey.....	51	79	25	73	78	326	1	3
Pennsylvania.....	145	151			1,425	962	3	9
<b>East North Central States:</b>								
Ohio.....	94	44	14	12	121	158	1	2
Indiana.....	68	45	9	29	119	275	11	8
Illinois.....	179	159	33	15	53	553	15	12
Michigan.....	22	55	6	1	165	150	2	5
Wisconsin.....	23	15	27	61	48	213	1	5
<b>West North Central States:</b>								
Minnesota.....	30	10	1	1	69	15	3	4
Iowa.....	33	8			2	4	2	3
Missouri.....	57	56	3	23	10	1,160	4	8
North Dakota.....	30	4			32		2	2
South Dakota.....	5	8			21	5	1	21
Nebraska.....	18	6	11	3	19	18	0	1
Kansas.....	41	14	5		50	12	0	1
<b>South Atlantic States:</b>								
Delaware.....	4	4	3			5	0	0
Maryland <sup>1</sup> .....	45	37	26	47	4	138	2	2
District of Columbia.....	21	15	3	2	2	11	2	1
Virginia.....								
West Virginia.....	48	19	36	41	301	25	1	3
North Carolina <sup>1</sup> .....	67	47	22	35	125	90	0	1
South Carolina.....	12	21	429	890	43	17	0	4
Georgia <sup>1</sup> .....	12	9	88	261	1	76	2	4
Florida.....	15	17	1	3		35	0	0

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Jan. 9, 1932, 9 cases: 1 case in North Carolina, 2 cases in Georgia, 2 cases in Alabama, and 4 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 9, 1932, and January 10, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931
East South Central States:								
Kentucky	54				32	74	1	3
Tennessee	43	9	41	162	10	180	3	2
Alabama <sup>1</sup>	20	56	58	103	9	357	0	0
Mississippi	22	11					0	1
West South Central States:								
Arkansas	22	11	26	56	3	6	0	0
Louisiana	32	46	25	138	14	5	0	5
Oklahoma <sup>4</sup>	47	32	44	85	6	49	0	1
Texas <sup>1</sup>	164	50	62	84	13	60	0	2
Mountain States:								
Montana		4	14		221	3	1	1
Idaho						12	0	0
Wyoming	1		3		1		0	1
Colorado	15	8			8	41	2	3
New Mexico	21	6	5		4	100	1	1
Arizona	4		1	13	4	50	0	3
Utah <sup>2</sup>		1		13			0	2
Pacific States								
Washington	4	9			372	39	1	3
Oregon	3	6	45	30	35	67	0	1
California	82	62	123	92	207	272	6	8
Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931
New England States:								
Maine	3	0	40	18	0	0	1	4
New Hampshire	0	0	14	4	0	0	0	0
Vermont	0	0	4	9	3	0	0	1
Massachusetts	1	2	440	274	0	0	11	6
Rhode Island	0	0	35	31	0	0	0	0
Connecticut	2	0	79	57	15	0	0	0
Middle Atlantic States:								
New York	9	3	653	611	7	11	20	11
New Jersey	1	1	228	219	0	0	7	2
Pennsylvania	1	2	580	552	0	1	22	22
East North Central States:								
Ohio	0	4	339	527	29	92	10	9
Indiana	0	1	153	287	4	90	7	3
Illinois	5	3	429	446	34	50	10	5
Michigan	3	0	194	258	20	18	9	7
Wisconsin	0	1	95	122	8	0	0	1
West North Central States:								
Minnesota	3	0	99	54	14	12	1	0
Iowa	1	4	43	156	78	37	1	1
Missouri	0	2	75	165	26	28	4	6
North Dakota	1	1	14	35	79	15	1	0
South Dakota	0	0	6	16	8	34	2	1
Nebraska	0	2	24	49	12	50	1	1
Kansas	0	2	49	53	2	106	6	4
South Atlantic States:								
Delaware	0	0	13	22	0	0	0	0
Maryland <sup>2</sup>	0	0	100	83	0	0	8	2
District of Columbia	1	0	23	43	0	0	1	1
Virginia						1		
West Virginia	0	0	48	37	0	8	13	10
North Carolina <sup>3</sup>	1	0	84	75	0	7	6	6
South Carolina	0	0	16	10	2	1	12	4
Georgia <sup>3</sup>	0	0	24	43	0	0	13	7
Florida	0	0	4	4	0	6	5	1

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Jan. 9, 1932, 9 cases: 1 case in North Carolina, 2 cases in Georgia, 2 cases in Alabama, and 4 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 9, 1932, and January 10, 1931— Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931	Week ended Jan. 9, 1932	Week ended Jan. 10, 1931
<b>East South Central States:</b>								
Kentucky.....	3	1	97	89	0	11	12	2
Tennessee.....	1	1	71	17	10	4	17	3
Alabama <sup>1</sup> .....	2	0	46	48	3	2	9	0
Mississippi.....	0	2	18	19	11	9	5	3
<b>West South Central States:</b>								
Arkansas.....	0	0	19	70	8	11	9	5
Louisiana.....	0	1	14	8	7	6	17	14
Oklahoma <sup>4</sup> .....	2	0	42	46	4	100	9	8
Texas <sup>1</sup> .....	1	1	111	51	19	48	14	9
<b>Mountain States:</b>								
Montana.....	0	0	51	43	5	8	0	2
Idaho.....	0	0	4	4	2	1	0	0
Wyoming.....	0	1	6	16	0	1	1	0
Colorado.....	1	0	58	34	4	24	0	1
New Mexico.....	1	0	18	7	0	2	1	1
Arizona.....	0	0	7	2	2	0	1	0
Utah <sup>1</sup> .....	0	0	10	4	3	2	0	0
<b>Pacific States:</b>								
Washington.....	0	0	56	32	31	27	3	3
Oregon.....	0	0	19	22	17	10	3	0
California.....	3	5	141	97	16	59	4	4

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Jan. 9, 1932, 9 cases: 1 case in North Carolina, 2 cases in Georgia, 2 cases in Alabama, and 4 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Men- ingo- coccus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Meas- les	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1931</i>										
Arkansas.....		234	37	67	35	22	3	137	11	50
Michigan.....	14	210	8	1	326		45	787	64	48
Mississippi.....	5	391	1, 243	2, 322	27	342	2	154	44	40
<i>December, 1931</i>										
Arizona.....	2	52	33	2	10		2	33	2	2
Connecticut.....	5	32	28	1	250		8	259	90	8
Georgia.....	6	111	184	94	9	22	2	102		35
Iowa.....	6	124			16		12	180	241	8
Maine.....	1	62	13		1, 467		2	144	0	9
Nebraska.....	1	88	10		61		1	111	26	7
Tennessee.....	14	206	106	37	49	12	3	211	21	67

## November, 1931

	Cases
Chicken pox:	
Arkansas.....	34
Michigan.....	763
Mississippi.....	238
Dengue:	
Mississippi.....	6
Dysentery:	
Mississippi (amebic).....	42
Lethargic encephalitis:	
Michigan.....	3
Mumps:	
Arkansas.....	7
Michigan.....	310
Mississippi.....	45
Ophthalmia neonatorum:	
Arkansas.....	1
Mississippi.....	4
Puerperal septicemia:	
Mississippi.....	15
Rabies in animals:	
Mississippi.....	1
Septic sore throat:	
Michigan.....	37
Trachoma:	
Arkansas.....	3
Mississippi.....	10
Tularaemia:	
Michigan.....	1
Undulant fever:	
Mississippi.....	2
Whooping cough:	
Arkansas.....	55
Michigan.....	694
Mississippi.....	302

## December, 1931

Chicken pox:	
Arizona.....	152
Connecticut.....	479
Georgia.....	80
Iowa.....	359
Maine.....	152
Nebraska.....	163
Tennessee.....	70
Dengue:	
Georgia.....	1
Dysentery:	
Georgia.....	3
Tennessee.....	2
German measles:	
Arizona.....	1
Connecticut.....	27
Iowa.....	5
Maine.....	25
Hookworm disease:	
Tennessee.....	1

Impetigo contagiosa:	Cases
Iowa.....	2
Tennessee.....	3
Lethargic encephalitis:	
Connecticut.....	4
Mumps:	
Arizona.....	11
Connecticut.....	175
Georgia.....	20
Iowa.....	38
Maine.....	14
Nebraska.....	47
Tennessee.....	47
Ophthalmia neonatorum:	
Tennessee.....	8
Paratyphoid fever:	
Connecticut.....	5
Maine.....	3
Rabies in animals:	
Connecticut.....	9
Septic sore throat:	
Connecticut.....	18
Georgia.....	17
Maine.....	2
Nebraska.....	20
Tennessee.....	13
Tetanus:	
Tennessee.....	1
Trachoma:	
Arizona.....	14
Tennessee.....	1
Trichinosis:	
Connecticut.....	2
Tularaemia:	
Iowa.....	6
Tennessee.....	7
Typhus fever:	
Georgia.....	8
Undulant fever:	
Arizona.....	1
Connecticut.....	2
Iowa.....	5
Nebraska.....	1
Tennessee.....	1
Vincent's angina:	
Iowa.....	6
Maine.....	5
Whooping cough:	
Arizona.....	10
Connecticut.....	232
Georgia.....	24
Iowa.....	118
Maine.....	99
Nebraska.....	18
Tennessee.....	159

**ADMISSIONS TO HOSPITALS FOR THE INSANE, DECEMBER, 1929**

Reports for the month of December, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 100 hospitals, located in 40 States, the District of Columbia, and the Territory of Hawaii. The 100 hospitals had 184,607 patients on December 31, 1929, 98,458 males and 86,149 females, the ratio being 114 males per 100 females.

The following table shows the number of new admissions for the month of December, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses .....	14	3	17
2. Senile psychoses .....	175	134	309
3. Psychoses with cerebral arteriosclerosis .....	154	104	258
4. General paralysis .....	192	38	230
5. Psychoses with cerebral syphilis .....	25	11	36
6. Psychoses with Huntington's chorea .....	1	1	2
7. Psychoses with brain tumor .....	3	0	3
8. Psychoses with other brain or nervous disease .....	30	18	48
9. Alcoholic psychoses .....	101	10	111
10. Psychoses due to drugs and other exogenous toxins .....	19	14	33
11. Psychoses with pellagra .....	8	22	30
12. Psychoses with other somatic diseases .....	43	48	91
13. Manic-depressive psychoses .....	144	249	393
14. Involution melancholia .....	34	54	88
15. Dementia præcox (schizophrenia) .....	334	249	583
16. Paranoia and paranoid conditions .....	26	19	45
17. Epileptic psychoses .....	46	44	90
18. Psychoneuroses and neuroses .....	23	34	57
19. Psychoses with psychopathic personality .....	15	9	24
20. Psychoses with mental deficiency .....	59	34	93
21. Undiagnosed psychoses .....	97	90	187
22. Without psychosis .....	187	38	225
Total .....	1,730	1,223	2,953

During the month of December, 1929, there were 2,953 new admissions to the hospitals, 58.6 per cent of these being males and 41.4 per cent females, the ratio being 141 males per 100 females. Four hundred and twelve of the new admissions were reported as undiagnosed or "without psychosis." There were 2,541 new admissions for which a provisional diagnosis was made. Of these 2,541 patients, cases of dementia præcox constituted 22.9 per cent; manic-depressive psychoses, 15.5 per cent; senile psychoses, 12.2 per cent; psychoses with cerebral arteriosclerosis, 10.2 per cent; and general paralysis, 9.1 per cent. These five classes accounted for 69.8 per cent of the new admissions for which a diagnosis was given.

The following table shows the number of patients in the hospitals and on parole on December 31, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals.....	87,735	77,556	165,291
On parole or otherwise absent, but still on books.....	10,723	8,593	19,316
Total.....	98,458	86,149	184,607

Of the 184,607 patients, 10,723 males and 8,593 females were on parole or otherwise absent but still on the books at the end of the month—10.9 per cent of the males, 10.0 per cent of the females, and 10.5 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 93 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,190,000. The estimated population of the 87 cities reporting deaths is more than 31,760,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended January 2, 1932, and January 3, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1,595	1,480	-----
93 cities.....	461	499	914
Measles:			
46 States.....	4,642	4,933	-----
93 cities.....	1,223	1,765	-----
Meningococcus meningitis:			
46 States.....	79	121	-----
93 cities.....	42	54	-----
Poliomyelitis:			
46 States.....	51	65	-----
Scarlet fever:			
46 States.....	4,203	4,469	-----
93 cities.....	1,443	1,434	1,247
Smallpox:			
46 States.....	339	662	-----
93 cities.....	21	43	26
Typhoid fever:			
46 States.....	255	196	-----
93 cities.....	31	32	27
<i>Deaths reported</i>			
Influenza and pneumonia:			
87 cities.....	817	1,075	-----
Smallpox:			
87 cities.....	0	0	-----

*City reports for week ended January 2, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	6	1	3		0	23	0	2
New Hampshire:								
Concord	0	0	0		0	0	0	0
Nashua	2	0	0		0	0	0	0
Vermont:								
Barre		0						
Massachusetts:								
Boston	0	43	19	5	1	7	9	6
Fall River	2	4	0		0	3	0	1
Springfield	10	5	0		0	3	10	2
Worcester	5	6	10		0	1	32	7
Rhode Island:								
Pawtucket	0	1	0		0	0	0	0
Providence	1	7	3		0	463	8	5
Connecticut:								
Bridgeport	3	6	0		0	1	0	6
Hartford	5	7	0		0	0	14	4
New Haven	18	0	0		0	1	15	3
MIDDLE ATLANTIC								
New York:								
Buffalo	34	13	5		2	3	0	19
New York	116	170	100	16	4	36	48	161
Rochester	7	6	2		0	36	7	4
Syracuse	18	2	0		0	4	0	1
New Jersey:								
Camden	3	5	2		2	0	0	3
Newark	25	17	2	6	0	1	1	6
Trenton	2	2	0		0	0	6	1
Pennsylvania:								
Philadelphia	77	61	4	9	4	3	19	55
Pittsburgh	23	21	11	1	0	124	29	29
Reading	20	1	0		0	1	2	2
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	8	10	4		3	0	0	9
Cleveland	73	36	9	17	2	84	58	18
Columbus	9	5	4	1	0	0	2	8
Toledo	33	9	4		0	2	2	3
Indiana:								
Fort Wayne	3	3	13		0	0	0	2
Indianapolis	30	9	0		0	0	15	16
South Bend	1	1	0		0	1	8	2
Terre Haute	5	0	1		0	0	0	3
Illinois:								
Chicago	76	121	44	13	5	33	6	55
Peoria	14		1		0	1	1	2
Springfield		1						
Michigan:								
Detroit	31	60	28	5	2	2	6	18
Flint	9	2	0		0	1	26	2
Grand Rapids	7	1	1	1	2	23	0	0



## City reports for week ended January 2, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN TRAL—continued								
Wisconsin:								
Kenosha.....	10	0	0	-----	0	1	0	0
Madison.....	4	2	0	-----	-----	1	0	-----
Milwaukee.....	62	17	2	3	3	7	17	4
Racine.....	6	2	0	-----	0	1	24	0
Superior.....	0	0	0	-----	0	0	4	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	4	0	0	-----	0	0	0	2
Minneapolis.....	18	16	5	-----	0	0	4	10
St. Paul.....	10	8	2	1	1	2	0	4
Iowa:								
Davenport.....	0	1	0	-----	-----	0	0	-----
Des Moines.....	0	1	2	-----	-----	1	0	-----
Sioux City.....	9	1	8	-----	-----	0	0	-----
Waterloo.....	2	0	0	-----	-----	0	0	-----
Missouri:								
Kansas City.....	12	6	7	-----	0	1	0	5
St. Joseph.....	2	0	4	-----	0	0	0	2
St. Louis.....	10	40	23	3	1	4	2	4
North Dakota:								
Fargo.....	8	0	0	-----	0	11	1	1
South Dakota:								
Aberdeen.....	8	0	0	-----	-----	14	0	-----
Sioux Falls.....	0	0	0	-----	-----	0	0	-----
Nebraska:								
Omaha.....	11	5	5	-----	0	1	1	6
Kansas:								
Topeka.....	6	1	1	-----	1	0	1	0
Wichita.....	10	2	13	-----	0	1	0	1
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	0	-----	0	0	0	2
Maryland:								
Baltimore.....	18	25	9	19	1	3	23	38
Cumberland.....	2	0	0	1	0	0	0	1
Frederick.....	0	0	2	-----	0	0	0	0
District of Columbia:								
Washington.....	7	16	3	3	3	2	0	14
Virginia:								
Lynchburg.....	1	2	4	-----	0	0	0	4
Norfolk.....	1	2	4	1	0	0	0	1
Richmond.....	4	6	6	-----	3	0	0	4
Roanoke.....	3	2	3	-----	0	2	2	2
West Virginia:								
Charleston.....	5	1	1	-----	0	3	0	0
Huntington.....	0	-----	4	-----	0	1	0	0
Wheeling.....	2	1	0	-----	0	2	0	1
North Carolina:								
Raleigh.....	6	1	0	-----	0	27	0	3
Wilmington.....	2	1	1	-----	0	0	0	0
Winston-Salem.....	6	1	2	1	0	0	0	1
South Carolina:								
Charleston.....	2	0	1	24	0	1	0	1
Columbia.....	0	0	0	-----	0	0	0	8
Greenville.....	0	-----	0	-----	0	0	0	0
Georgia:								
Atlanta.....	6	6	1	16	1	0	1	8
Brunswick.....	0	0	1	-----	0	0	0	0
Savannah.....	1	0	0	13	1	0	0	1
Florida:								
Miami.....	0	0	1	-----	0	0	0	0
Tampa.....	0	1	2	1	0	0	0	0

## City reports for week ended January 2, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....		0						
Lexington.....	2		2		0	0	0	2
Tennessee:								
Memphis.....	0	5	6		0	0	0	9
Nashville.....	1	2	1		2	1	1	3
Alabama:								
Birmingham.....	2	5	9	4	2	0	3	4
Mobile.....	0	1	0		0	0	0	6
Montgomery.....	0	1	1			4	1	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	3			0	0	
Little Rock.....	0	1	0		1	1	0	11
Louisiana:								
New Orleans.....	0	14	0	2	6	0	0	6
Shreveport.....	3	1	4		0	18	1	4
Oklahoma:								
Muskogee.....	0		3			0	2	
Texas:								
Dallas.....	2	13	14	1	1	0	0	7
Fort Worth.....	3	6	10		0	0	0	5
Galveston.....	0	0	1		0	0	0	1
Houston.....	0	8	14		0	0	0	11
San Antonio.....	0	4	2		5	0	0	4
MOUNTAIN								
Montana:								
Billings.....	1	0	0		0	5	0	0
Great Falls.....	1	0	0		0	0	0	0
Helena.....	0	0	0		0	54	0	0
Missoula.....	0	0	0		0	0	0	1
Idaho:								
Boise.....		0						
Colorado:								
Denver.....	15	8	4		14	0	10	14
Pueblo.....	5	1	0		1	0	0	2
New Mexico:								
Albuquerque.....	7	1	1		1	2	0	0
Arizona:								
Phoenix.....	0	1	1		0	0	0	3
Utah:								
Salt Lake City.....	29	3	0		0	0	1	1
Nevada:								
Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	25	4	0			160	7	
Spokane.....		1						
Tacoma.....	6	2	0		0	1	1	7
Oregon:								
Portland.....	6	7	1	8	1	1	3	3
Salem.....	9	0	0		6	0	2	0
California:								
Los Angeles.....	66	35	29	82	3	1	14	31
Sacramento.....	2	2	2		0	53	0	13
San Francisco.....	30	16	0	17	3	2	0	22

## City reports for week ended January 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	2	4	0	0	0	0	0	0	0	5	18
New Hampshire:											
Concord.....	0	2	0	0	0	0	0	0	0	0	11
Nashua.....	0	1	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	1	-----	0	-----	-----	-----	0	-----	-----	-----	-----
Massachusetts:											
Boston.....	74	129	0	0	0	11	1	2	0	16	199
Fall River.....	3	8	0	0	0	0	0	1	0	3	21
Springfield.....	9	4	0	0	0	1	0	0	0	1	48
Worcester.....	11	37	0	0	0	2	0	1	0	31	-----
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	15
Providence.....	11	25	0	0	0	3	0	0	0	5	56
Connecticut:											
Bridgeport.....	10	7	0	5	0	1	0	0	0	2	35
Hartford.....	7	5	0	0	0	0	0	0	0	7	49
New Haven.....	4	3	0	0	0	0	0	1	0	8	37
MIDDLE ATLANTIC											
New York:											
Buffalo.....	25	49	0	0	0	4	0	0	0	19	142
New York.....	186	229	0	0	0	70	8	4	0	87	1,432
Rochester.....	11	47	0	0	0	0	0	0	0	8	60
Syracuse.....	11	17	0	0	0	2	0	0	0	55	41
New Jersey:											
Camden.....	4	12	0	0	0	0	0	0	0	4	37
Newark.....	19	21	0	0	0	9	0	0	0	47	106
Trenton.....	4	2	0	0	0	2	0	0	0	2	43
Pennsylvania:											
Philadelphia.....	84	117	0	0	0	22	2	2	0	178	463
Pittsburgh.....	36	42	0	0	0	7	0	0	0	23	142
Reading.....	3	1	0	0	0	1	0	0	0	8	25
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	18	44	0	0	0	15	1	0	0	4	132
Cleveland.....	40	35	0	0	0	11	0	0	0	104	218
Columbus.....	11	12	1	0	0	1	0	2	1	16	81
Toledo.....	13	10	1	0	0	2	0	1	0	89	70
Indiana:											
Fort Wayne.....	4	1	0	0	0	1	0	0	0	0	25
Indianapolis.....	9	3	5	0	0	2	0	1	0	6	-----
South Bend.....	3	2	0	0	0	0	0	0	0	2	16
Terre Haute.....	3	3	0	0	0	1	0	0	0	0	20
Illinois:											
Chicago.....	122	137	1	11	0	30	8	2	0	106	733
Peoria.....	-----	4	-----	0	0	0	0	0	0	10	29
Springfield.....	2	-----	0	-----	-----	-----	0	-----	-----	-----	-----
Michigan:											
Detroit.....	96	102	2	0	0	17	1	0	0	61	258
Flint.....	12	12	0	0	0	1	0	0	0	6	26
Grand Rapids.....	11	11	0	0	0	2	0	0	0	6	37
Wisconsin:											
Kenosha.....	3	2	1	0	0	0	0	0	0	3	9
Madison.....	3	0	0	0	-----	0	0	0	0	0	-----
Milwaukee.....	29	18	0	0	0	3	0	0	0	69	82
Racine.....	5	0	0	0	0	0	0	0	0	0	14
Superior.....	3	0	0	0	0	0	0	0	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	10	0	0	0	0	3	0	0	0	0	14
Minneapolis.....	48	23	1	0	0	1	0	0	0	0	62
St. Paul.....	25	2	0	0	0	1	0	0	1	6	49

## City reports for week ended January 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-reported	Typhoid fever			Whoop- ing cough, cases re-reported	Deaths, all causes
	Cases, estimated expectancy	Cases re- ported	Cases, estimated expectancy	Cases re- ported	Deaths re- ported		Cases, estimated expectancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	1	3	0	1			0	0		0	
Des Moines	8	3	1	0				0		0	29
Sioux City	2	1	0	2			0	0		3	
Waterloo	3	0	0	9			0	1		4	
Missouri:											
Kansas City	15	8	0	0	0	5	0	0	0	9	99
St. Joseph	2	2	0	0	0	0	0	0	0	0	25
St. Louis	37	16	1	0	0	13	1	0	0	37	197
North Dakota:											
Fargo	2	1	0	0	0	0	0	0	0	1	10
South Dakota:											
Aberdeen	0	1	0	0			0	0		2	
Sioux Falls	1	0	0	1			0	0		0	6
Nebraska:											
Omaha	6	4	2	0	0	4	0	0	0	3	58
Kansas:											
Topeka	2	1	0	0	0	0	0	0	0	12	9
Wichita	5	2	0	0	0	0	0	0	0	3	25
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	6	0	0	0	1	0	0	0	0	35
Maryland:											
Baltimore	30	23	0	0	0	11	2	1	0	109	247
Cumberland	0	5	0	0	0	2	0	0	0	0	5
Frederick	0	5	0	0	0	0	0	0	0	3	2
District of Columbia:											
Washington	24	23	0	0	0	9	1	1	0	14	173
Virginia:											
Lynchburg	1	2	0	0	0	0	0	0	0	0	9
Norfolk	2	11	0	0	0	1	0	0	0	0	
Richmond	7	27	0	0	0	4	0	0	0	0	51
Roanoke	3	3	0	0	0	1	0	0	0	0	24
West Virginia:											
Charleston	2	3	0	0	0	2	0	1	1	0	126
Huntington		1		0	0	0		0	0	0	
Wheeling	2	2	0	0	0	1	0	0	1	1	19
North Carolina:											
Raleigh	1	1	0	0	0	0	0	0	0	0	13
Wilmington	1	0	0	0	0	0	0	0	0	10	11
Winston-Salem	2	1	0	0	0	2	0	0	0	7	12
South Carolina:											
Charleston	1	0	0	0	0	3	0	0	0	0	22
Columbia	0	2	0	0	0	0	0	0	0	0	23
Greenville		0		0	0	0		0	0	2	
Georgia:											
Atlanta	5	8	1	0	0	3	0	0	0	2	94
Brunswick	0	0	0	0	0	0	0	0	0	0	2
Savannah	1	0	0	0	0	1	0	0	0	1	42
Florida:											
Miami	2	0	0	0	0	2	0	0	0	0	29
Tampa	2	1	0	0	0	1	0	0	0	1	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2		0				0			3	27
Lexington		1		0	0	0		0	0		
Tennessee:											
Memphis	7	4	0	0	0	8	1	3	0	3	88
Nashville	5	1	0	0	0	4	0	1	0	5	44
Alabama:											
Birmingham	3	4	1	0	0	4	1	2	0	0	76
Mobile	0	8	0	0	0	1	0	0	0	0	28
Montgomery	0	2	0	0			0	0		0	

1 Nonresident.

19 nonresidents included.

## City reports for week ended January 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-ported	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	2	0	0			0	0		0	
Little Rock.....	2	3	0	0	0	3	0	0	0	3	15
Louisiana:											
New Orleans.....	7	11	0	0	0	16	2	1	1	3	146
Shreveport.....	2	3	0	0	0	0	0	0	2	3	20
Oklahoma:											
Muskogee.....		2		0				0		2	
Texas:											
Dallas.....	7	11	1	0	0	1	0	0	0	0	40
Forth Worth.....	2	7	0	2	0	1	0	0	0	0	32
Galveston.....	0	0	0	0	0	0	0	0	0	0	9
Houston.....	3	2	1	0	0	3	0	0	0	0	86
San Antonio.....	2	0	0	0	0	8	0	0	0	0	61
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	6
Great Falls.....	3	1	0	0	0	1	0	0	0	0	10
Helena.....	0	0	0	0	0	0	0	0	0	0	2
Missoula.....	0	5	0	0	0	0	0	0	0	0	4
Idaho:											
Boise.....	1		0				0				
Colorado:											
Denver.....	13	16	0	0	0	4	0	0	0	2	107
Pueblo.....	1	0	1	0	0	0	0	0	0	0	11
New Mexico:											
Albuquerque.....	0	1	0	0	0	3	0	0	0	1	14
Arizona:											
Phoenix.....	0	0		0	0	4		0	0	0	
Utah:											
Salt Lake City.....	1	2	0	0	0	0	0	0	0	3	38
Nevada:											
Reno.....	0	0	0	0	0	1	0	0	0	0	4
PACIFIC											
Washington:											
Seattle.....	8	11	1	0			1	1		4	
Spokane.....	7		4				0				
Tacoma.....	4	1	3	1	0	0	0	0	0	0	35
Oregon:											
Portland.....	6	3	0	2	0	4	0	0	0	1	83
Salem.....	0	0	0	0	0	0		0	0	1	2
California:											
Los Angeles.....	33	37	1	1	0	19	2	0	0	14	323
Sacramento.....	2	0	1	0	0	2	0	0	0	0	40
San Francisco.....	17	4	1	1	0	13	0	3	0	0	230

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Poliagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Maine:									
Portland.....	1	0	0	0	0	0	6	1	0
Massachusetts:									
Boston.....	1	0	0	0	0	0	0	1	0
Connecticut:									
Hartford.....	0	1	0	0	0	0	0	0	0

## City reports for week ended January 2, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York <sup>1</sup> .....	5	1	0	1	0	0	1	4	0
Pennsylvania:									
Pittsburgh.....	1	0	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	1	0	0	0	0	0	0	0	0
Cleveland.....	1	0	1	0	0	1	0	0	0
Indiana:									
Indianapolis.....	17	5	0	0	0	0	0	0	0
South Bend.....	1	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	4	0	0	0	0	1	2	0
Michigan:									
Detroit.....	0	1	0	0	0	0	0	0	0
Flint.....	0	0	0	1	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	1	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	1	1	0	0	0	0	0	0	0
St. Paul.....	1	0	0	0	0	0	0	1	0
Iowa:									
Des Moines.....	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	1	0	0	0	0	0	0	0	0
North Dakota:									
Fargo.....	0	1	0	0	0	0	0	0	0
Kansas:									
Topeka.....	0	0	0	0	1	0	0	0	0
<b>SOUTH ATLANTIC <sup>1</sup></b>									
Maryland:									
Baltimore.....	0	0	1	0	0	0	0	0	0
District of Columbia:									
Washington.....	1	1	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	0	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	0	0	0	0	1	1	0	0	0
Nashville.....	2	1	0	0	0	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	1	1	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
New Mexico:									
Albuquerque.....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	0	0	0	0	0	0	1	1	0
Sacramento.....	1	1	0	0	0	0	0	0	0
San Francisco.....	0	0	0	0	0	0	0	2	0

<sup>1</sup> Typhus fever, 3 cases and 1 death: 1 case and 1 death at New York City, N. Y.; and 2 cases at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended January 2, 1932, compared with those for a like period ended January 3, 1931. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

*Summary of weekly reports from cities, November 29, 1931, to January 2, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930-31<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 3, 1931
98 cities.....	101	<sup>2</sup> 90	93	<sup>2</sup> 87	103	<sup>2</sup> 94	72	71	<sup>2</sup> 72	80
New England.....	88	121	70	123	84	143	65	75	<sup>4</sup> 85	116
Middle Atlantic.....	64	58	59	47	71	62	57	47	<sup>5</sup> 66	68
East North Central.....	94	112	86	120	104	116	69	102	<sup>5</sup> 65	91
West North Central.....	222	101	168	97	187	80	134	54	130	83
South Atlantic.....	164	112	118	122	118	108	99	86	71	62
East South Central.....	163	143	163	138	157	84	111	84	<sup>6</sup> 107	72
West South Central.....	244	<sup>2</sup> 147	287	<sup>2</sup> 132	189	<sup>2</sup> 202	115	143	129	136
Mountain.....	52	18	26	26	96	18	26	62	<sup>7</sup> 36	62
Pacific.....	88	65	61	55	82	83	41	40	<sup>8</sup> 64	55

## MEASLES CASE RATES

	113		118		128		126		181		281	
	113	<sup>2</sup> 142	118	<sup>2</sup> 162	128	<sup>2</sup> 194	126	181	<sup>2</sup> 192	281		
98 cities.....	113	<sup>2</sup> 142	118	<sup>2</sup> 162	128	<sup>2</sup> 194	126	181	<sup>2</sup> 192	281		
New England.....	481	220	656	273	637	271	945	305	<sup>4</sup> 1,213	268		
Middle Atlantic.....	111	85	80	85	79	87	66	70	<sup>5</sup> 93	101		
East North Central.....	31	28	28	28	60	28	32	27	<sup>5</sup> 94	55		
West North Central.....	27	953	40	1,077	25	1,416	80	1,277	<sup>5</sup> 38	1,894		
South Atlantic.....	43	62	22	80	26	138	11	124	<sup>70</sup>	322		
East South Central.....	35	155	17	299	52	275	17	323	<sup>6</sup> 31	921		
West South Central.....	27	<sup>2</sup> 11	17	<sup>2</sup> 11	44	<sup>2</sup> 18	41	21	<sup>64</sup>	24		
Mountain.....	757	53	809	150	740	167	339	229	<sup>7</sup> 533	317		
Pacific.....	180	26	210	26	294	6	250	16	<sup>8</sup> 445	24		

## SCARLET FEVER CASE RATES

	179		222		214		187		222		231	
	179	<sup>2</sup> 202	222	<sup>2</sup> 224	214	<sup>2</sup> 234	187	222	<sup>2</sup> 227	231		
98 cities.....	179	<sup>2</sup> 202	222	<sup>2</sup> 224	214	<sup>2</sup> 234	187	222	<sup>2</sup> 227	231		
New England.....	293	268	397	259	438	351	389	353	<sup>4</sup> 541	327		
Middle Atlantic.....	155	178	199	196	202	208	205	190	<sup>240</sup>	229		
East North Central.....	229	257	281	315	284	308	227	285	<sup>234</sup>	261		
West North Central.....	161	198	143	209	138	279	126	240	<sup>115</sup>	236		
South Atlantic.....	172	230	176	260	201	208	107	178	<sup>221</sup>	262		
East South Central.....	128	299	250	377	157	197	157	341	<sup>6</sup> 119	299		
West South Central.....	108	<sup>2</sup> 92	142	<sup>2</sup> 84	101	<sup>2</sup> 73	41	59	<sup>108</sup>	108		
Mountain.....	218	141	261	211	261	300	113	379	<sup>2</sup> 17	220		
Pacific.....	100	97	153	71	94	83	61	85	<sup>8</sup> 109	73		

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.

<sup>2</sup> Shreveport, La., not included.

<sup>3</sup> Barre, Vt., Springfield, Ill., Covington, Ky., Boise, Idaho, and Spokane, Wash., not included.

<sup>4</sup> Barre, Vt., not included.

<sup>5</sup> Springfield, Ill., not included.

<sup>6</sup> Covington, Ky., not included.

<sup>7</sup> Boise, Idaho, not included.

<sup>8</sup> Spokane, Wash., not included.

Summary of weekly reports from cities, November 29, 1931, to January 2, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 8, 1931
98 cities.....	5	7	4	14	5	9	4	7	3	7
New England.....	55	0	7	0	55	0	14	0	12	0
Middle Atlantic.....	1	0	0	0	0	0	0	0	0	0
East North Central.....	0	1	2	3	4	6	4	2	7	5
West North Central.....	4	48	13	122	4	48	10	43	4	46
South Atlantic.....	0	0	0	0	0	0	0	0	0	0
East South Central.....	0	0	0	0	0	0	0	0	0	0
West South Central.....	3	14	17	7	3	15	7	17	0	17
Mountain.....	0	106	0	150	0	115	0	35	7	9
Pacific.....	10	10	10	6	2	10	8	20	6	10

## TYPHOID FEVER CASE RATES

	7	10	9	18	5	18	6	7	5	8
98 cities.....	7	10	9	18	5	18	6	7	5	8
New England.....	5	7	10	19	7	10	2	2	12	2
Middle Atlantic.....	5	8	6	6	5	3	4	3	3	4
East North Central.....	4	10	3	7	1	9	2	12	3	4
West North Central.....	4	6	6	6	0	8	4	6	2	2
South Atlantic.....	16	18	32	4	10	12	14	16	6	4
East South Central.....	12	12	17	18	23	36	12	18	38	48
West South Central.....	27	26	34	22	34	26	44	0	3	3
Mountain.....	26	9	0	0	0	9	0	9	7	18
Pacific.....	10	10	6	6	2	6	4	6	8	6

## INFLUENZA DEATH RATES

	7	9	8	9	8	10	9	11	13	16
91 cities.....	7	9	8	9	8	10	9	11	13	16
New England.....	2	5	5	5	5	2	7	2	4	7
Middle Atlantic.....	4	6	8	7	6	5	7	10	5	17
East North Central.....	6	8	3	5	6	10	5	7	10	7
West North Central.....	6	12	6	21	6	15	3	9	9	3
South Atlantic.....	6	20	12	24	12	20	12	24	18	20
East South Central.....	38	13	25	26	6	32	32	19	27	26
West South Central.....	7	34	7	11	17	23	24	32	45	93
Mountain.....	9	18	35	9	17	18	70	0	135	18
Pacific.....	19	2	14	7	14	10	7	17	14	10

## PNEUMONIA DEATH RATES

91 cities .....	89	' 99	98	' 106	106	' 111	101	126	' 121	164
New England .....	91	73	67	119	111	116	94	119	4 92	180
Middle Atlantic .....	95	101	108	104	116	127	101	126	126	184
East North Central .....	56	77	66	86	63	69	77	94	8 84	103
West North Central .....	88	132	112	150	103	96	118	117	103	190
South Atlantic .....	146	164	140	134	142	138	132	174	174	230
East South Central .....	95	155	113	123	120	110	113	149	6 151	207
West South Central .....	135	' 128	104	' 162	142	' 135	131	189	152	199
Mountain .....	122	132	87	159	200	220	226	194	7 172	264
Pacific .....	77	60	130	60	122	127	89	135	175	135

\* Shreveport, La., not included.

\* Barre, Vt., Springfield, Ill., Covington, Ky., Boise, Idaho, and Spokane, Wash., not included.

\* Barre, Vt., not included.

\* Springfield, Ill., not included.

\* Covington, Ky., not included.

\* Boise, Idaho, not included.

\* Spokane, Wash., not included.

\* Barre, Vt., Springfield, Ill., Covington, Ky., and Boise, Idaho not included.



## FOREIGN AND INSULAR

### SMALLPOX ON VESSEL

*Brazilian ship "Jaboatao" at New Orleans.*—According to information dated January 8, 1932, the Brazilian steamship *Jaboatao* from Santos, Victoria, and Bahia, Brazil, arrived in New Orleans with one case of smallpox on board. The patient was taken to the quarantine station hospital, and the crew and pilot were vaccinated. The living quarters of the ship were fumigated, and the crew were detained at the quarantine station to remain until vaccination became protective or until they were placed on board the ship, which was to return directly to Brazil within five days.

### CANADA

*Provinces—Communicable diseases—Week ended December 26, 1931.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 26, 1931, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Polio-myelitis	Typhoid fever
Prince Edward Island <sup>1</sup>					
Nova Scotia		1			1
New Brunswick					1
Quebec				5	8
Ontario	1	1	1		8
Manitoba					1
Saskatchewan	1				
Alberta <sup>1</sup>					
British Columbia				1	1
Total	2	2	1	6	20

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended December 26, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 26, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox	63	Pollomyelitis	5
Diphtheria	20	Scarlet fever	65
German measles	1	Tuberculosis	20
Measles	110	Typhoid fever	8
Mumps	26	Whooping cough	48

## CUBA

*Habana—Communicable diseases—Four weeks ended January 2, 1932.*—During the four weeks ended January 2, 1932, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	10	4	Scarlet fever.....	4	—
Malaria <sup>1</sup> .....	10	1	Tuberculosis.....	15	2
Measles.....	15	—	Typhoid fever <sup>1</sup> .....	8	2

<sup>1</sup> Many of these cases are from the island, outside of Habana.

## PANAMA CANAL ZONE

*Communicable diseases—November, 1931.*—During the month of November, 1931, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis.....	1	—	Pneumonia.....	—	25
Chicken pox.....	16	—	Scarlet fever.....	1	—
Diphtheria.....	3	—	Tuberculosis.....	—	25
Dysentery (amebic).....	2	—	Typhoid fever.....	1	—
Malaria.....	56	2	Whooping cough.....	17	—
Measles.....	22	—			

## PERU

*Lima—Poliomyelitis.*—According to information dated January 7, 1932, 21 cases of poliomyelitis were reported in Lima, Peru.







## PLAGUE

[C indicates cases; D deaths; P present]

Place		Week ended—															
		July		Aug.		October, 1931				November, 1931				December, 1931			
		29- July 23- 1931		26- Aug. 22- 1931		Sept 19- 26, 1931		Oct. 3- 10		Oct. 17- 24		Oct. 31- 7		Nov. 14- 21		Nov. 28- 5	
		1931		1931		1931		1931		1931		1931		1931		1931	
Algeria:																	
Algiers	C		2														
Philippeville	C	1	2														
Argentina: San Juan Province	D	1															
Azores:	C	P															
San Miguel Island	C																
Tarceira Island	D																
British East Africa (see also table below)																	
Tanganyika	C	6	9	4				2		3							
Uganda	D	0	2	4													
	C	418	249	249	13	62	67	67	68	71							
Ceylon: Colombo	D	469	281	267	22	63	67	68	70								
	C	1	6	1	1	1	1	1	1								
	D	1	0	8	1	1	1	1	1								
Plague-infected rats																	
Chile Santiago	C																
China:																	
Shansi Province	C																
Shensi Province	C																
Dutch East Indies																	
Batavia and West Java	C	75	58	65	21	31	29	24	24	24	24	24	24	24	24	24	24
Java and Madura	D	75	38	46	20	23	23	23	23	23	23	23	23	23	23	23	23
Ecuador (see table below)	D	212	203	233	77	69	45	64	57	131	131	131	131	131	131	131	131
Egypt																	
Alexandria	C	13	9	5	1					1	1	1	1	1	1	1	1
Assout	D	5	3	2													
	C																
	D																

<sup>1</sup> On July 27, 1931, 1,250 cases of plague were reported in Chiole and Changchow, China, since April (in Sept. 19, 1931, 18 deaths were reported in Changchuanpu and new cases in Kaifeng and Fengtien.

<sup>2</sup> On Oct. 17, 1931, plague epidemic was reported in western Shansi Province, China, with 2,000 deaths at Hsinghsien.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D deaths; P present]

Place	June 28- July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Week ended—												Jan. 2, 1932	
				October, 1931			November, 1931				December, 1931						
				3	10	17	24	31	7	14	21	28	5	12	19		26
Egypt—Continued.																	
Beheira.....	1	2	2														
Dakahlia.....	1																
Girga.....																	
Kena.....																	
Minieh.....	12																
Port Said.....	4	2															
Tanta.....	1	2	2														
France: Rouen—Devilleles																	
Hawaii Territory:																	
Hawaii—Hamakua—Plague-infected rats		1															
Mauli Island—																	
Halimaile—Plague-infected rats			1														
Kula District.....		1															
Makawao—Plague-infected rats																	
Pala—Plague-infected rats																	
Pasaulo—Plague-infected rats																	
India.....																	
Bassein.....	221	684	1,832	723	527	600	700	619	625								
Bombay.....	128	440	772	355	222	263	307	304	287								
Burma.....	3	2	4	1				1									
Madras Presidency.....	12	2	4	1				1									
Plague-infected rats.....	6	47	57	9	0	12	12	4									
Burma.....	48																
Madras Presidency.....	16																
Jan. 2, 1932.....	10																
Jan. 2, 1932.....	21																
Jan. 2, 1932.....	9																





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	June, 1931	July, 1931	Aug., 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- ven- ber, 1931	Place	June, 1931	July, 1931	Aug., 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- ven- ber, 1931
British East Africa (see also table above):							Peru—Continued.						
Kenya.....	154	484	235	14	64		Huancabamba—Ayacaba.....						7
Ecuador:							Huancabamba.....						6
Alamora Parish—Los Hoyos.....							Huaura—Chancay.....					1	
Amaluza Parish—Cangochapa.....							Plague-infected rats.....						
Calvas Canton.....							La Samana—Huagayoc.....					1	
Carlanmanga.....							Luzia—Lima.....						4
Oveleria.....							Lima—Lima (haciendas).....						1
Celicia Canton—Choras.....							Pajaro—Trujillo.....						1
Loja Canton.....							Pailon—Huagayoc.....						1
Lopez.....							Patovilea—Chancay.....						10
Naimuro.....							Quispampa—Huancabamba.....						6
Faterillo.....							San Pedro.....						1
Tuburo.....							Supa—Chancay.....						2
Pallas Canton—San Antonio.....							Senegal.....						1
Indo-China.....							Baol <sup>1</sup> .....						2
Madagascar (see also table above):							Dakar <sup>1</sup> .....						2
Ambositra Province.....	15	1	2	1	1		Diourbel <sup>1</sup> .....						4
Antsirabe Province.....	15	1	1	1	1		Louga <sup>1</sup> .....						10
Miarinarivo Province.....	12	13	22	19	10		Rufisque <sup>1</sup> .....						19
Moramanga Province.....	12	8	20	14	4		Thies <sup>1</sup> .....						10
Tananarive Province.....	7	1	19	12	6		Tirocouane <sup>1</sup> .....						12
Tananarive Province.....	1	1	3	11	4								7
Tananarive Province.....	10	5	45	65	63								5
Tananarive Province.....	9	5	44	63	62								7
Tananarive Province.....	5	3	19	6	2								6
Tananarive Province.....	1	2	14	2									19
Barranca—Chancay.....													10
Callao—Plague-infected rats.....													19
Chepen—Facsamayo.....													10
Eten—Chiclayo.....													12
													7

<sup>1</sup> Reports incomplete.



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—															
	June 28–July 25, 1931	July Aug. 22, 1931	Aug. 23–Sept. 19, 1931	October, 1931					November, 1931				December, 1931			Jan. 2, 1932
				Sept. 20, 1931	3	10	17	24	31	7	14	21	28	5	12	
Chosen (see table below).																
Columbia:																
Call.																
Santa Marta			1												1	
Eritrea	2		10													
France (see table below).																
Great Britain:																
England and Wales	187	91	97	45	34	41	39	42	71	68	55	56	57	48	44	
London	54	26	32	5	17	15	21	27	55	27	38	27	35	18	18	
London and Great Towns	152	69	88	35	31	25	37	37	66	45	48	48	53	42	31	
Greece (see table below).	1		2													
Sheffield																
Greece (see table below).																
Honduras:										1					1	
Puerto Castilla																
Tecucigalpa																
India:																
Bombay	5,359	2,927	1,705	382	528	238	283	197	270	378						
	1,352	746	433	100	122	47	55	46	66	63						
	6	2	5								1			2		
	6	2	5								1			1		
Calcutta	21	13	9	5	1			1					1			
	18	3		1	1	2	4	3								
Cochin				1												
Karachi				1						2			4	3	2	
Madras				1							1		2	1	1	
	2	1	1	1	5	6	1	2	2			2	2	1		
Nagapatam				1	2	2	1				1					
	1	2	4	1	1	1				1						
Rangoon				1	1	1										
	3	4	2	2	2	1	1	1	1	1				3	4	
Tuticorin	1	2	1	1	1						2	2	2	1	2	
	1		2	1	1						2	2	4			
Vizagapatam				1	1	1	1	1	1							
	5	5	6	2	1	1										
	1	4	6	6	4	1										







**CHOLERA PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

**TYPHUS FEVER--Continued**

[C indicates cases; D, deaths; P, present]

[illegible]

Place	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	Place	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931
China: Seoul.....	C	6	1				4	Lithuania.....	C	10	13	8	2		5
Czechoslovakia.....	D	1	1				1	Turkey.....	D	2	2			1	
Greece.....	C	11	2			18		Union of Socialist Soviet Re- publics.....	C	13	11	9		16	14
Guatemala.....	D	6	2	13	9	12		Yugoslavia.....	C	1,324	2	3	1		
	D		34	2	1				C	14					
		15	5	3											

<sup>1</sup> Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal regions.









UNITED STATES TREASURY ~~DEPARTMENT~~

# PUBLIC HEALTH REPORTS

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## SPECIAL ARTICLES

Action of Arsenic on Fixed Sulphydryl Groups of Proteins  
The Chlorination of Ballast Water on Great Lakes Vessels



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

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# PUBLIC HEALTH REPORTS

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## ACTION OF ARSENIC UPON THE FIXED SULPHYDRYL GROUPS OF PROTEINS

By SANFORD M. ROSENTHAL, *Senior Pharmacologist, National Institute of Health;  
United States Public Health Service*

The relationship of the pharmacological action of arsenic to sulphydryl compounds was first demonstrated by Voegtlin, Dyer, and Leonard in 1923 (1). These investigators showed that the toxic effects of arsenious oxides upon trypanosomes *in vivo* and *in vitro* could be prevented by amorphous reduced glutathione, cysteine, and related SH compounds. It was also shown that death in the rat from a lethal dose of arsenic could be offset by such compounds (2), particularly amorphous glutathione. The corresponding disulphide compounds had little or no effect, and various amino acids (containing no SH group), lecithin, glucose, and inorganic salts were without effect.

These observations were confirmed by Rosenthal and Voegtlin (3) employing crystalline SH glutathione. It was further shown that the local inflammatory action of arsenoxide could be prevented, and chemical evidence was also presented to show an interaction between SH glutathione and arsenious oxides.

Voegtlin, Rosenthal, and Johnson (4) have recently studied the effect of various trivalent and pentavalent arsenicals upon the oxygen consumption of tissues and yeast cells *in vitro*, by means of the Warburg microrespiration apparatus. Only the trivalent arsenic compounds were found to reduce the oxygen consumption, and it was possible here again to prevent this action by crystalline SH glutathione, while S-S glutathione was without effect.

Since glutathione is a physiological constituent of living cells, these experiments have definitely established a relationship between the biological action of arsenic and glutathione. The possibility was suggested by Voegtlin, Dyer, and Leonard (1) (2), and in later publications, that arsenic might react with other sulphydryl compounds of protoplasm such as proteins. The present work deals with this question of a combination of arsenic with the fixed sulphydryl groups of native and denatured proteins. It has been possible to demonstrate such a reaction by three different methods of approach—physico-chemical, chemical, and biological.



Little is known of the constitution, distribution, and significance of the "fixed" sulphydryl compounds in tissues. Heffter (5) demonstrated that a positive nitroprusside test as an indication of sulphydryl compounds was given by many plant and animal tissues. Upon the discovery of glutathione, Hopkins (6) thought that this substance was mainly responsible for the presence of this test; but Hopkins and Dixon (7) later observed that after all the glutathione was washed from muscle, an insoluble residue remained which still gave a strong nitroprusside reaction. To the substances responsible for this reaction they gave the name "fixed SH groups." The fixed sulphydryl groups were resistant to extraction with boiling water, alcohol, ether, and acetone. They were comparatively stable in air, but were thought to be susceptible to reversible oxidation reduction by other SH or S-S systems (8). Very little in addition has been added to our knowledge of the fixed sulphydryl systems *as they occur in the native tissue proteins*. Hopkins and Dixon (7) worked principally with muscle proteins that had been denatured by heat and alcohol, although they also demonstrated the presence of sulphydryl groups in the native muscle proteins freed from glutathione. By the dialysis of tissues until the glutathione is removed, we have found that various organs contain fixed SH groups in their native proteins. This observation lends practical significance to the experiments herein reported. As shown by Heffter (5) and studied in detail by Harris (9) many native proteins develop sulphydryl radicals when subjected to denaturation. Abderhalden and Wertheimer (10) showed that such a system in denatured egg albumin is susceptible to oxidation by cystine. Recently Mirsky and Anson (11) have attempted to estimate quantitatively the sulphydryl groups in denatured proteins.

#### PHYSICO-CHEMICAL EXPERIMENTS ON THE COMBINATION OF ARSENICALS WITH PROTEINS

Arsenoxide (3-amino-4-hydroxyphenyl arsenious oxide) was used as a source of trivalent arsenic, and the corresponding 3-amino-4-hydroxyphenyl arsonic acid was used as a pentavalent arsenical. We are indebted to Dr. J. M. Johnson of this laboratory for their preparation. It was previously found by Rosenthal and Voegtlin (3) that arsenoxide could be titrated with iodate by the Okuda method, and this method was employed for estimating arsenoxide in protein-free filtrates. The pentavalent compound, of course, gave no iodine titer, and its presence was estimated by the Gutzeit method, after a preliminary ashing of the material at 600° to 650° C. in the presence of potassium carbonate.

Collodion sacs were prepared from an 8 per cent collodion solution in 70 parts of alcohol and 30 parts of ether. The inner surfaces of pyrex test tubes were heavily coated with this solution and allowed

to dry in air for 30 minutes. The sacs were then detached with water, tied to large glass tubes, and arranged for purposes of ultrafiltration under air pressure of 60 to 90 mm. of mercury. A neutral solution of arsenoxide was added to various proteins to make the final concentrations 0.001 molar. The ultrafiltrates of these solutions were shown to be protein free. The first cubic centimeter or so was discarded, and arsenic determinations were done upon samples collected later.

The results of such experiments are shown in Table 1. A striking relationship exists between the presence of sulphydryl groups in the proteins and their ability to combine with trivalent arsenic and hold it back from the ultrafiltrate.

Fresh egg white (nitroprusside test negative) was diluted with equal parts of 0.8 per cent sodium chloride solution. It was shown that the protein-free ultrafiltrate of this solution did not give a titer with iodine. To one portion of this egg white (6 per cent protein) arsenoxide was added and the solution placed in the ultrafilter. After collection of sufficient ultrafiltrate for iodometric titration of the arsenic, the sac was thoroughly washed. The other portion of egg white was now coagulated by immersion in boiling water for two minutes and cooled under tap water. The coagulated protein gave a strong nitroprusside test for sulphydryl radicals. The same concentration of arsenoxide as that used in the preceding experiment was added to the coagulated egg white and ultrafiltered in the same collodion sac. While 92 per cent of the arsenic came through in the ultrafiltrate from the native egg white, no arsenic was demonstrable in the filtrate from the egg white which had been coagulated to bring out the SH groups.

TABLE 1.—*Ultrafiltration experiments demonstrating that proteins combine with "arsenoxide" only when they contain sulphydryl groups*

Solution in filter	Concentration of arsenic in ultrafiltrate
	<i>Per cent</i>
Fresh egg white diluted with equal parts of 0.8 per cent NaCl+0.001 molar arsenoxide (pH 7.8). Egg white coagulated (100° C. for 2 min.)+0.001 molar arsenoxide (pH 7.8).....	92 0
2.1 per cent solution of crystalline egg albumin+0.001 molar arsenoxide (pH 7.6). 2.1 per cent solution of crystalline egg albumin coagulated (100° C. for 2 min.)+0.001 molar arsenoxide (pH 7.6).....	100 6
1.06 per cent solution of ovoglobulin+0.001 molar arsenoxide..... 1.06 per cent solution of ovoglobulin coagulated (100° C. for 2 min.)+0.001 molar arsenoxide..	97.5 83
1.72 per cent solution of casein+0.001 molar arsenoxide (pH 7.3).....	96.5
5 c. c. rabbit serum+15 c. c. 0.8 per cent NaCl+0.001 molar arsenoxide..... 5 c. c. coagulated serum (100° C. for 2 min.)+15 c. c. 0.8 per cent NaCl+0.001 molar arsenoxide..	100 90

Equally clear results were obtained from a 2.1 per cent solution of crystalline egg albumin (once recrystallized and dialyzed two days in tap water to remove the ammonium sulphate). The native albumin combined with none of the arsenic, for it appeared in the ultrafiltrate in 100 per cent concentration, while the coagulated albumin combined with 94 per cent of the arsenic (6 per cent in the filtrate). Calculations reveal that on a basis of these results, 1 gram of coagulated crystalline egg albumin combined with 11.81 mg. of arsenoxide.

Ovoglobulin was prepared by precipitation with half-saturated ammonium sulphate, redissolving and reprecipitation by dialysis in running water for two days. It was finally dissolved in 0.8 per cent salt solution. A 1.06 per cent solution of the native globulin combined with 2.5 per cent of the added arsenic while the coagulated globulin combined with 17 per cent. At first it was believed that these results indicated a weaker combining power for globulin than for coagulated egg albumin, but further study revealed that the sulphydryl groups brought out by heat coagulation of ovoglobulin are relatively unstable, rapidly undergoing oxidation in contact with air so that the nitroprusside test becomes negative after a 1 to 2 hours' standing. By the time that the arsenic was added to the coagulated globulin some of the sulphydryl groups had oxidized, and the resulting disulphide compounds were not able to combine with the arsenic. That the combining power of the sulphydryl groups of coagulated globulin is as great as, or greater than, that for albumin will be demonstrated in the chemical experiments presented here. The sulphydryl groups in egg albumin are much more stable and under similar conditions the nitroprusside test will remain positive for many days.

Casein was selected as a denatured protein which contained no sulphydryl radicals. A casein powder that had been purified by washing for 12 days with 0.2 per cent acetic acid was brought into solution by standing overnight in lime water. The next day it was filtered through filter paper and the filtrate containing 1.72 per cent casein was employed. The ultrafiltrate from this solution contained 96.5 per cent of the added arsenic.

Blood serum was taken as another protein solution considered to give a negative nitroprusside reaction following heat coagulation (Heffter (5), Harris (9) Hopkins (8)). Native rabbit serum (diluted 1 to 4) combined with no arsenoxide, 100 per cent appearing in the ultrafiltrate. Heat-coagulated serum combined with 10 per cent of the added arsenic. This, however, can most likely be explained by the presence of sulphydryl groups; for, contrary to the previous observers, we found that serum (rabbit, dog, chicken) coagulated as previously described, develops a weak but definitely positive nitroprusside reaction which persists for 10 to 30 minutes. Some highly unstable sulphydryl groups are evidently liberated which oxidize very rapidly.

Experiments were next performed upon tissue proteins. A thermostable muscle powder was prepared according to the method of Hopkins and Dixon (7) by extracting rat muscle with boiling water, washing 20 times in distilled water, and thoroughly extracting the residue with alcohol and ether. One gram of this powder (which gave a strong nitroprusside test) suspended in water combined with 93 per cent of the added arsenoxide. A solution of arsenoxide in water as a control showed 100 per cent diffusibility, as evidence that in these experiments none of the arsenic was held back by the colloidion sac. (Table 2.)

TABLE 2.—*The ability of tissues with fixed sulphydryl groups to combine with arsenoxide (ultrafiltration experiments)*

Solution in filter	Concentration of arsenic in ultrafiltrate
	Per cent
15 c. c. of 0.001 m. arsenoxide.....	100
15 c. c. of 0.001 m. arsenoxide+1 gram muscle powder.....	7
25 c. c. 0.001 m. arsenoxide.....	100
7 grams minced rat liver (washed 14 times)+25 c. c. 0.001 m. arsenoxide (pH 6.8).....	25
20 c. c. of 0.001 m. arsenoxide (pH 7.6).....	100
2 grams rat testes dialyzed for two days+0.001 m. arsenoxide (pH 7.6).....	64

The liver freshly removed from a rat was thoroughly minced with fine scissors and washed (by centrifugation) 14 times with Locke's solution (pH 7.7). The last washings gave a negative nitroprusside test, while a test on the extracted liver tissue was still positive. Seven grams of the washed liver were added to 25 c. c. of 0.001 molar arsenoxide and placed in the ultrafilter. The concentration of arsenic in the ultrafiltrate revealed that 75 per cent of the arsenic had combined with the liver. (Table 2.)

Two grams of rat testes were minced with fine scissors, and dialyzed in running tap water for two days. At this time the nitroprusside test upon a trichloroacetic acid extract of the testes was negative, showing that no reduced glutathione was present. The test upon the dialyzed testes was still strongly positive. The tissue was now diluted with water and arsenoxide was added to make a 0.001 molar solution in a final volume of 20 c. c. Upon ultrafiltration it was shown that 36 per cent of the arsenic had combined with the testes. (Table 2.)

The facts that (a) only those proteins containing sulphydryl groups combine with appreciable amounts of arsenoxide; (b) that proteins that have been coagulated and their colloidal surfaces thereby greatly reduced combine with arsenoxide, while (c) the same native proteins that contain no SH groups do not, give evidence that such a combination is a chemical reaction and not a question of surface adsorption.

Further proof that this union involves a chemical reaction between the trivalent arsenic and sulphhydryl groups is shown in experiments with 3-amino-4-hydroxyphenyl arsonic acid, having the same molecular structure as arsenoxide except that the arsenic is in the pentavalent form. An ultrafiltration experiment performed upon a freshly prepared 2.1 per cent solution of recrystallized egg albumin under conditions identical with those of arsenoxide, revealed that the pentavalent arsenical combined with none of the albumin, either in the native state or after heat coagulation, 100 per cent concentrations appearing in the ultrafiltrates in both cases. (Table 3.) The ultrafiltrates as well as the original solutions were diluted 1 to 10 for the arsenic determinations by the Gutzeit method.

TABLE 3.—*The inability of the fixed SH groups of proteins to combine with arsenic when it is in the pentavalent state (ultrafiltration experiments)*

Solution in filter	Concentration of arsenic in ultrafiltrate (Gutzeit)
2.1 per cent solution of native crystalline egg albumin+m/1000 3-amino-4-hydroxyphenyl arsonic acid.....	{ 0.076 mg. per c. c. 100 per cent.
2.1 per cent solution of coagulated egg albumin+m/1000 3-amino-4-hydroxyphenyl arsonic acid.....	{ 0.076 mg. per c. c. 100 per cent.
5.4 gm. rat testes (dialyzed for 1 day)+m/1000 3-amino-4-hydroxyphenyl arsonic acid.....	100 per cent.

Similarly, experiments upon native tissue proteins that contained sulphhydryl groups demonstrated that the pentavalent arsenic compound did not combine with them. Five and four-tenths grams of testes, from two rats, were minced with scissors and dialyzed in running tap water for 24 hours. After that time the trichloroacetic acid extract of the testes showed only a trace of color with the nitroprusside reaction, while the (undenatured) dialyzed tissue gave a strongly positive reaction. The volume of the tissue was now made up to 22.5 c. c. and 2.5 c. c. of 0.01 molar 3-amino-4-hydroxyphenyl arsonic acid added. Determinations of arsenic (run in duplicate) by the Gutzeit method showed the same concentration in the protein-free ultrafiltrate as in the supernatant fluid. (Table 3.)

The lack of a reaction between the tissue proteins and pentavalent arsenic is particularly interesting since it is generally considered (Joachimoglu (12); Kuroda (13)) that tissues can reduce arsenic from the pentavalent to the trivalent form. It is evident that no such reduction takes place *within the time of these experiments*, and within a pH range close to neutrality; this is in agreement with the observations of Voegtlin, Rosenthal, and Johnson (4), who found that this

compound and other pentavalent arsenicals did not bring about a reduction of oxygen consumption of tissues, *in vivo*, during observations extending over two hours or longer.

CHEMICAL EVIDENCE OF AN ACTION OF ARSENIC UPON THE SULPHYDRYL GROUPS OF PROTEINS

In the course of the preceding experiments it was observed that when the trivalent arsenical was added to proteins containing a sulphydryl radical, the nitroprusside test became negative. Under the conditions of these experiments the nitroprusside test may be considered as specific for sulphydryl radicals (14). The disappearance of this reaction could mean either an oxidation of the SH groups or the formation of a compound no longer giving the test.

The following experiment, performed with the Warburg micro-respiration apparatus, demonstrated that the disappearance of the nitroprusside test was not due to the oxidation of the SH groups. To 84 mg. of coagulated crystalline egg albumin (4.0 c. c.) at pH 7.5, in a respiration vessel, 0.5 c. c. of 0.01 molar arsenoxide was added from a side arm after readings had begun. No uptake of oxygen over a period of four hours was brought about by this addition.

It can be shown in another way that this action of arsenic upon the tissue sulphydryl groups is not an oxidation. If oxidation is brought about by other means, the addition of cyanide will reduce these groups and restore the nitroprusside test. When the nitroprusside test has been made to disappear by trivalent arsenic, cyanide has no effect in rendering the test positive. This demonstrates that the union between arsenic and sulphydryl is sufficiently firm so that it is not dissociated by cyanide.

The disappearance of the nitroprusside reaction also takes place when arsenoxide is added to crystalline SH glutathione or to cysteine. When increasing amounts of arsenoxide are added to these compounds, the nitroprusside test becomes proportionately diminished; and when approximately ten times the molar quantity of arsenoxide is added, the test becomes negative and is not restored by the addition of cyanide.<sup>1</sup>

Advantage was taken of these observations to study the combining power of the sulphydryl-containing proteins with arsenoxide, using the nitroprusside test as an indicator. The principle of this method is different from that of the ultrafiltration experiments in that it depends on the detection of reactive sulphydryl groups, whereas the preceding method was based upon estimations of uncombined arsenic. In its present state the nitroprusside method can not be used for the

<sup>1</sup> Further evidence of a chemical union between arsenic and the SH group of cysteine is afforded by the Sullivan test. Just as with the nitroprusside test, the Sullivan test for cysteine and cystine is rendered negative by approximately ten times the molar concentration of arsenoxide.

quantitative estimation of fixed sulphhydryl groups in proteins, for the results on glutathione and cysteine show that an excess of arsenic is required beyond the theoretical requirements of such a reaction. The experiments are of interest, however, in showing that a quantitative relationship exists, and also in comparing the values obtained upon different proteins. The protein arsenic mixture is allowed to stand with equal parts of 5 per cent sodium cyanide for at least ten minutes before carrying out the nitroprusside tests. This permits the cyanide to reduce the existing S-S groups in the proteins to SH groups and thereby make them available for combination with the arsenic. The presence of cyanide does not interfere with the reaction between arsenic and SH, so that with this procedure consistent results can be obtained upon a given protein solution.

It was found with coagulated egg white that a definite linear ratio exists between the quantity of protein present and the amount of arsenic required to make the nitroprusside test negative. Thus, various amounts of egg white, from 12 to 54 mg. of protein, required quantities of arsenoxide that were in linear proportion. (Table 4.)

TABLE 4.—*The quantity of arsenoxide necessary to render the nitroprusside test negative upon heat denatured proteins (100° C. for 2 minutes), equal parts of 5 per cent cyanide added before performing the test*

	m/400 arsenoxide	H <sub>2</sub> O	Nitro- prusside test	Amount of arsenoxide per gram of protein
<i>Egg white (with equal parts of sa- line 6 per cent protein)</i>				
0.2 c. c.	0.2 c. c.	0.2 c. c.	+	17.7 mg.
0.2 c. c.	0.3 c. c.	0.1 c. c.	neg.	
0.2 c. c.	0.4 c. c.	0	neg.	
0.3 c. c.	0.3 c. c.	0.2 c. c.	+	17.7 mg.
0.3 c. c.	0.4 c. c.	0.1 c. c.	±	
0.3 c. c.	0.5 c. c.	0	neg.	
0.6 c. c.	0.7 c. c.	0.2 c. c.	+	17.7 mg.
0.6 c. c.	0.8 c. c.	0.1 c. c.	+	
0.6 c. c.	0.9 c. c.	0	neg.	
0.9 c. c.	1.1 c. c.	0.4 c. c.	+	17.7 mg.
0.9 c. c.	1.3 c. c.	0.2 c. c.	±	
0.9 c. c.	1.5 c. c.	0	neg.	
<i>Rabbit serum (with equal parts of sa- line)</i>				
0.5 c. c.	0.2 c. c.	0.2 c. c.	+	11.15 mg.
0.5 c. c.	0.3 c. c.	0.1 c. c.	neg.	
0.5 c. c.	0.4 c. c.	0	neg.	
<i>0.71 per cent solu- tion of crystalline egg albumin</i>				
2.0 c. c.	0.05 c. c.	0.25 c. c.	+	12.7 mg.
2.0 c. c.	0.2 c. c.	0.1 c. c.	+	
2.0 c. c.	0.25 c. c.	0.05 c. c.	±	
2.0 c. c.	0.3 c. c.	0	neg.	
<i>0.70 per cent solu- tion of coaglobu- lin</i>				
{	0.2 c. c.	0.15 c. c.	+	15.22 mg.
	0.25 c. c.	0.1 c. c.	+	
	0.3 c. c.	0.05 c. c.	±	
	0.35 c. c.	0	neg.	

We have shown that serum, after rapid heat coagulation, gives a faint nitroprusside reaction which rapidly becomes negative. The addition of cyanide to serum makes the nitroprusside test strongly positive, an observation also made by Walker (15). It is therefore possible by the above technique to titrate the disulphide groups in coagulated serum. With rabbit serum a titer with arsenoxide was obtained that was only slightly lower than that of the other proteins studied. It will be recalled in this connection that in the ultrafiltration experiments where no cyanide was employed, the serum combined with very little arsenic.

By this method egg albumin required an equivalent of 12.72 mg. of arsenoxide per gram of protein to render the nitroprusside test negative. This is in close agreement with the results of the ultrafiltration experiments where albumin, with no cyanide present, combined with 11.81 mg. of arsenoxide per gram of protein. This would indicate that heat coagulation of egg albumin brings out practically all of the available SH groups; and in support of this it was found that if nitroprusside tests were performed soon after coagulation, the absence of cyanide made no appreciable difference in the arsenoxide titer.

In the ultrafiltration experiments it was found that globulin combined with much less arsenoxide than did albumin, and this was shown to be associated with the rapid oxidation of the SH groups of coagulated globulin. When the available sulphhydryl groups of coagulated ovoglobulin were reduced with cyanide, it was found that ovoglobulin required slightly more arsenoxide to render the nitroprusside test negative than did ovoalbumin; this is evidence of more S-S or SH groups in globulin than in albumin. (Table 4.)

*Decrease in reducing power of fixed SH groups produced by arsenic.*—We were able by another chemical method to demonstrate a combination between trivalent arsenic and SH groups. This is illustrated by the following experiments: Into a series of Thunberg tubes were placed 5 c. c. of fresh egg white (diluted 1 to 3 with saline). To four of the tubes was added methylene blue to make a final concentration of  $m/15000$ , and into the remainder indigo carmine to make a  $m/12000$  solution. Varying amounts of neutralized arsenious oxide were added; the tubes were evacuated by means of a high vacuum pump and then immersed in water at  $85^{\circ}\text{C}$ . for five minutes, to coagulate the egg white. The time required to reduce the indicators was as follows:

*Methylene blue*

Egg white.....	$\frac{1}{2}$ minute.
Egg white + $m/170\text{ As}_2\text{O}_3$ .....	3 hours.
Egg white + $m/500\text{ As}_2\text{O}_3$ .....	2 minutes.
Egg white + $m/1000\text{ As}_2\text{O}_3$ .....	1 minute.



	<i>Indigo carmine</i>	Per cent reduction in—	
		5 min.	2 hours
Egg white.....	-----	100	----
Egg white + m/250 $\text{As}_2\text{O}_3$ .....	-----	50	50
Egg white + m/10000 $\text{As}_2\text{O}_3$ .....	-----	90-100	100

Native egg white plus arsenious oxide was without effect under these conditions.

*Pentavalent arsenic.*—In agreement with the ultrafiltration experiments, it was found that the addition of 3-amino-4-hydroxyphenyl arsonic acid or of arsenic pentoxide to coagulated egg albumin did not bring about a disappearance of the nitroprusside test, even when large amounts of these arsenicals were added. Only the trivalent arsenic can combine with the sulphhydryl groups.

#### BIOLOGICAL EXPERIMENTS DEMONSTRATING A COMBINATION BETWEEN TRIVALENT ARSENIC AND FIXED SULPHYDRYL GROUPS

The method which we have employed for this purpose was to study the influence of proteins, with and without sulphhydryl groups, on the toxic action of arsenic upon trypanosomes *in vitro*. This is an adaptation of the procedure used by Voegtlin, Dyer, and Leonard (1) to show the antagonism between glutathione and arsenic. Varying concentrations of arsenoxide were added to the protein solution in small-sized test tubes. After thorough mixing, the blood from a rat heavily infected with *Trypanosoma equiperdum* was introduced. At short intervals a drop of the mixture was removed with a glass rod and examined under the microscope as to the condition of the trypanosomes.

Egg white was first studied in this manner. The native egg white makes an excellent control, for it contains various proteins (without detectable SH groups) as well as carbohydrates and fats with which arsenoxide might combine. Just as in the ultrafiltration experiments no evidence of such a combination occurred. The arsenoxide was just as toxic for trypanosomes when suspended in uncoagulated egg white as it was in 0.8 per cent saline solution. (Table 5.) A concentration of m/100000 arsenoxide caused complete cessation of motility of the trypanosomes in ten minutes.

TABLE 5.—*The prevention of the toxic action of arsenoxide on trypanosomes (in vitro) by coagulated egg white*

Final concentration of arsenoxide	Egg white uncoagulated	Effect on trypanosomes								
		5 min.	10 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	1,140 min.
m/1,000	0.75 c. c.	Im.	Im.	Im.	Im.	Cytol.	-----	-----	-----	-----
m/5,000	0.75 c. c.	Im.	Im.	Im.	Im.	Cytol.	-----	-----	-----	-----
m/10,000	0.75 c. c.	Slug.	Im.	Im.	Im.	Im.	Cytol.	-----	-----	-----
m/100,000	0.75 c. c.	Slug.	Im.	Im.	Im.	Im.	Im.	Cytol.	-----	-----
0	0.75 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
0	0 (0.8% NaCl.)	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Cytol.
	Egg white coagulated									
m/1,000	0.75 c. c.	Mo.	Mo.	Im.	Im.	Im.	Im.	Cytol.	Cytol.	Cytol.
m/5,000	0.75 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Im.
m/10,000	0.75 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Im.
m/100,000	0.75 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
0	0.75 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
0	0 (0.8% NaCl.)	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Cytol.

Mo. = motile; Slug. = sluggish; Im. = immotile; Cytol. = cytotoxicity.

Coagulation of the egg white made a striking difference. Concentrations of arsenoxide as high as m/5,000 were practically devoid of toxic action when a similar quantity of coagulated egg white was present. Even after 19 hours (at room temperature) the organisms were still motile in the mixture containing m/100,000 arsenoxide and in the egg white solutions alone. At this time motility had ceased in the presence of higher concentrations of arsenic, and in the 0.8 per cent salt solution control.

This same protective action was manifested by coagulated recrystallized egg albumin (previously dialyzed two days to remove the ammonium sulphate). Arsenoxide, in concentrations as high as m/5,000, during the length of the experiment showed no toxic action in the presence of 2.1 per cent coagulated albumin, while a concentration of m/100,000 caused cessation of motility within ten minutes when the protein was present in its native state. (Table 6.)

TABLE 6.—*The prevention of the toxic action of arsenoxide on trypanosomes (in vitro) by coagulated crystalline egg albumin*

Final concentration of arsenoxide	2.1% egg albumin solution uncoagulated	Effect on trypanosomes								
		5 min.	10 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	150 min.
m/1,000	2.7 c. c.	Im.	Im.	Im.	Cytol.	Cytol.	Cytol.	Cytol.	Cytol.	Cytol.
m/5,000	2.7 c. c.	Im.	Im.	Im.	Im.	Im.	Cytol.	Cytol.	Cytol.	Cytol.
m/10,000	2.7 c. c.	Im.	Im.	Im.	Im.	Im.	Cytol.	Cytol.	Cytol.	Cytol.
m/100,000	2.7 c. c.	Mo.	Im.	Im.	Im.	Im.	Im.	Im.	Im.	Im.
m/100,000	0 (0.8% NaCl.)	Mo.	Im.	Im.	Im.	Im.	Im.	Im.	Im.	Im.
0	2.7 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
	2.1% egg albumin solution coagulated									
m/1,000	2.7 c. c.	Im.	Im.	Im.	Im.	Im.	Cytol.	Cytol.	Cytol.	Cytol.
m/5,000	2.7 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
m/10,000	2.7 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
m/100,000	2.7 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
0	2.7 c. c.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.
0	0 (0.8% NaCl.)	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.	Mo.

Mo. = motile; Im. = immotile; Cytol. = cytotoxicity.

## COMPARISON OF RESULTS WITH THE THREE METHODS

A comparison of the results obtained upon the same protein solution with the ultrafiltration, nitroprusside, and trypanosome procedures was made, to see what relationship the values obtained bore to each other.

For this purpose a sample of recrystallized egg albumin (dialyzed one day) was employed. It contained 1.67 per cent protein and the pH of the solution was 7.4. An ultrafiltration experiment carried out in the usual manner upon this coagulated egg albumin solution revealed that by this method the albumin combined with the equivalent of 14.17 mg. of arsenoxide per gram of protein. (Table 7.) This is in fair agreement with the value of 11.81 mg. obtained with the 2.1 per cent albumin solution in the earlier experiment.

The value for the amount of arsenoxide necessary to render the nitroprusside test negative upon this solution was an equivalent of 11.81 mg. of arsenoxide per gram of protein. In these experiments the tests were done soon after the coagulation of the protein and the same value was obtained in the absence of cyanide as in its presence, so that the results are comparable to those with ultrafiltration. In the previous studies with the nitroprusside test (Table 4) upon the 0.71 per cent albumin solution, a value of 12.7 mg. of arsenoxide per gram of protein was obtained.

In the trypanosome experiments a preliminary test was done to establish the approximate amount of arsenoxide inactivated by a given quantity of coagulated albumin. A series of tubes was then set up, as shown in Table 7, in which the concentrations of arsenoxide were varied within this range. A fairly sharp end point was obtained, considering that the trypanosomes are affected by extremely small amounts of arsenoxide. For the purpose of calculating the combining power of the protein with arsenic, the concentration that caused cessation of motility of the organisms in 10 minutes was taken as an end point. This represents a concentration of active arsenoxide of approximately  $m/100,000$  which is within the range of experimental error of the methods with which a comparison is being made. On this basis, the trypanosome experiments indicate that 1 gram of coagulated albumin can inactivate 7.87 mg. of arsenoxide.

TABLE 7.—*A comparison of the ability of a solution of coagulated crystalline egg albumin to combine with arsenoxide, as determined by the three different methods*

1.67% solution crystalline egg albumin (pH 7.4)	Arsenoxide	Ultrafiltration experiments	Amount arsenoxide combined with 1 g. albumin
22.5 c. c.	2.5 c. c. m/100	18.2% of arsenoxide in ultrafiltrate	14.17 mg.
		Nitroprusside tests	
1.0 c. c.	0.1 c. c. m/400		++
1.0 c. c.	0.15		+
1.0 c. c.	0.2		+
1.0 c. c.	0.25		+
1.0 c. c.	0.3		neg.
		Time required to stop motility of trypanosomes	
2.5 c. c.	0.55 c. c. m/400	< 5 min.....	7.87 mg.
2.5 c. c.	0.5	10 min.....	
2.5 c. c.	0.45	30 min.....	
2.5 c. c.	0.4	40 min.....	
2.5 c. c.	0.35	120 min.....	
2.5 c. c.	0.3	Some motility present in 120 min.....	
2.5 c. c.	0.2	Motility present in 120 min.....	

These results show a good agreement between individual experiments with the ultrafiltration and nitroprusside methods, and also that upon a given protein these two methods yield results that are quite close to each other. This is added proof that physical adsorption of arsenoxide by protein does not play a part in the ultrafiltration experiments. The tests upon trypanosomes yield a result somewhat lower than that with the other procedures. One factor that could contribute to this discrepancy is that the test object used to demonstrate the absence of free arsenoxides, i. e., the trypanosomes, themselves contain sulphydryl groups (Voegtlin, Dyer, and Leonard (1)) and can therefore compete with the SH groups of the protein for the arsenic.

#### DISCUSSION

The above described experiments demonstrate that trivalent arsenic (arsenoxide) combines chemically with those proteins that contain fixed sulphydryl groups in their molecule, and that no such combination occurs in the absence of SH groups. This constitutes good evidence of the specificity of such a reaction, and it is further supported by the demonstration that pentavalent arsenic is unable under the conditions of these experiments to enter into this combination.

These results lend support to the view that the action of trivalent arsenic upon living tissues is primarily upon the sulphydryl compounds. It is particularly satisfying to such a view that arsenoxide is just as toxic for trypanosomes in native egg white, containing a wide variety of chemical substances, as it is in salt solution, while

coagulated egg white, containing SH groups, greatly decreases the toxicity of this arsenical.

A discussion of the mechanism of arsenic action, with particular reference to the SH compounds of living cells, has been recently presented by Rosenthal and Voegtlin (3). The present evidence substantiates these views and suggests the physiological rôle of the fixed sulphhydryl groups in tissue respiration, since a decrease in respiratory function is a characteristic effect of arsenious oxides. The relationship of fixed SH groups of extracted tissues to biological oxidations has been made the subject of investigation particularly by Meyerhof (16) and Hopkins (8). Our experiments showing that the action of arsenic brings about a decrease in the reducing power of SH groups is of particular interest in this connection. Levaditi and his associates (17) have shown that atoxyl, *in vitro*, becomes trypanocidal when incubated at 37° C. with minute amounts of glutathione or with tissue proteins. Their explanation concerning glutathione is that more trivalent arsenic is formed from atoxyl than can be completely neutralized by the sulphhydryl compounds present, but they did not establish the rôle of the fixed SH groups of proteins in such a mechanism.

A discussion of the relative importance of glutathione and of the fixed sulphhydryl groups of proteins in the mechanism of action of arsenic upon the tissues would be premature at this point.

The titration of the fixed SH groups of proteins with arsenoxide, employing the disappearance of the nitroprusside test as an end point, affords a simple way to study these compounds, and, providing that the quantitative relationships of the procedure can be established, it should prove of value as a method for the quantitative estimation of such sulphhydryl compounds. By omitting cyanide from the procedure, repeated determinations upon a protein solution can be employed to indicate the relative rates of oxidation of SH groups.

#### SUMMARY

1. Arsenoxide, a trivalent arsenical (3-amino-4-hydroxyphenyl arsenious oxide), was added to native egg white, crystalline egg albumin, ovoglobulin, blood serum, and casein (containing no SH groups) and the solutions were ultrafiltered through collodion membranes. No evidence of a combination between arsenic and protein occurred, the arsenic appearing in the ultrafiltrate in approximately the original concentration.

2. When these proteins were coagulated to bring out the SH groups, ultrafiltration experiments revealed a marked ability to combine with arsenoxide and the degree of combination was proportionate to the sulphhydryl groups present (as evidenced by the strength of the nitroprusside test).

3. Fresh rat testes and liver when washed free from glutathione were shown to contain fixed SH groups, and these preparations, as well as a thermostable muscle residue, were shown by ultrafiltration experiments to be able to combine with arsenoxide.

4. Ultrafiltration experiments upon a similar arsenic compound containing arsenic in the pentavalent state (3-amino-4-hydroxy-phenyl arsonic acid) showed that coagulated proteins and glutathione-free tissues, containing fixed SH groups, did not combine with pentavalent arsenic.

5. Arsenoxide when added to sulphhydryl-containing proteins combines with the SH groups in such a way that they no longer give the nitroprusside test. This union is sufficiently firm as to be unaffected by the addition of cyanide. The arsenoxide titers, using the disappearance of the nitroprusside test as an end point, were determined upon various proteins, and upon SH glutathione and cysteine.

6. Pentavalent arsenic can be shown by this method also to be unable to combine with fixed SH groups, for it does not bring about the disappearance of the nitroprusside test.

7. It can be shown by a biological method that trivalent arsenic does not combine with native proteins containing no SH groups, for arsenoxide is just as toxic for trypanosomes in the presence of native egg white or crystalline egg albumin as it is in 0.8 per cent salt solution.

8. When egg white or crystalline egg albumin are coagulated to bring out their SH groups, a combination with arsenoxide occurs and complete protection of trypanosomes against arsenic action can be effected by the presence of these coagulated proteins.

9. The presence of arsenious oxide interferes with the reduction of methylene blue and indigo carmine, under anaerobic conditions, by coagulated egg white.

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## THE CHLORINATION OF BALLAST WATER ON GREAT LAKES VESSELS

By G. H. FERGUSON, *Chief Sanitary Engineer, Department of Pensions and National Health of Canada*

In the final report of the International Joint Commission on the Pollution of Boundary Waters issued in 1918, it was recognized that in addition to contamination of Great Lakes waters by vessel sewage there was also a possibility of polluting harbor waters, particularly near municipal intakes, by the unrestricted discharge of vessel ballast water, which is usually seriously contaminated. After a discussion of pollution by vessel sewage, the report continues as follows:

Pollution by water ballast constitutes a more difficult problem. There has not yet come to the notice of the commission any feasible means of purifying the rather large quantities of water which vessels while in the polluted areas of inner harbors frequently take on board for purposes of ballast, and which they afterwards discharge upon approaching their destination, often while passing water intakes. It will probably be sufficient for the present at least to control this practice by regulations designed to limit or prevent the discharge of ballast water in the neighborhood of intakes. In the event of failure of such control by regulations, more expensive and time-consuming methods of treatment will have to be developed and prescribed.

With a view to investigating the feasibility of such methods as were suggested for chlorinating ballast water, and also to consider other relevant matters, a brief study of this question was made in the latter part of the navigation season of 1930.

The data collected are presented in the accompanying table:

*Data regarding ballast water and ballast tanks on certain Great Lakes vessels*

Vessel	Total ballast capacity	Time to discharge	Remarks
	Tons	Hours	
Huronic.....			Ballast tanks filled at Sarnia and discharged there on return from Windsor. Ballast water also taken at Fort William prior to trip to Duluth.
Shelton Weed.....	810	5	
Rahane.....	730	6	
Ralph Budd.....	2,000	6	
Algonquins.....	1,000	5	
Noronic.....			Ballast tanks filled at Point Edward going westward and emptied at Point Edward on return trip eastward.
Ontadoc.....	2,000	6	
Penetang.....	975	4	
Coalhaven.....	1,250	5	
Lachinoc.....	760	5	
Harmonic.....			Ballast tanks filled or emptied at any point that is required and emptied as cargo becomes heavier
Donnacona.....	7,852	2	
Royalite.....	1,000	3	
Aycliffe Hall.....			Ballast tanks unlined.
Lemoyne.....	7,000		Ballast tanks unlined and never cleaned.
Soreldoc.....			Ballast tanks unlined and never cleaned. Variable ballast carried.
Elgin.....			Ballast tanks never cleaned
City of Windsor.....			Ballast water taken from Toronto Harbor and discharged at or near Montreal.
Cement Karrier.....			Ballast tanks unlined
City of Toronto.....			Ballast water obtained in Lake Ontario
Ashcroft.....			Ballast tanks not cleaned and unlined.
Maplebay.....		6	Ballast water obtained in Montreal Harbor and canals is discharged in harbor at Fort William.

While the small number of vessels examined does not warrant the drawing of very specific conclusions, there are, nevertheless, a number of observations to be made. The ballast tank capacity of canal-sized freighters and upper lake vessels ranges from 750 to 7,500 tons, which may be discharged in periods from 2 to 6 hours. In a typical steamship the ballast water is stored in the forepeak, two or three tanks under the cargo hold and engine room, and in the afterpeak. Additional ballast capacity is sometimes obtained by flood valves opening from the tanks into the cargo hold. Each tank is separated not only by a bulkhead but also by a partition running parallel with and over the keel. The pumping arrangement is usually a simple one, suction pipes from each tank leading to a common manifold in the engine room and thence to the pump or pumps.

There are several methods of chlorinating ballast water which might be adopted, using sodium hypochlorite as the medium for transporting the chlorine. One proposal was to add a 2 per cent solution of sodium hypochlorite by means of a chlorinator to the ballast water as it was discharged from the tanks through the chlorinating chamber (pipes or tank) to overboard. As the detention period available would seriously limit the time for the chlorine to complete its action, a high concentration of solution would be necessary and this might lead to possible corrosion of ship plate if a ship tank were used for the retention chamber. For this reason a separate tank



would have to be built in the engine room or at some other convenient place. This plan, while it has the merit of being an effective one, might be prohibitive because of the cost entailed.

To lessen this disadvantage and to render effective the long detention period afforded by vessels in plying from port to port, a second proposal was to chlorinate the water on admission to the ballast tanks. This might be done in two ways. A solution chlorinator installed near the ballast water pumps would add a definite amount of chlorine to the water as it was pumped to the tanks, or, dispensing with additional apparatus altogether, proper amounts of the solution could be added to the empty tanks by means of the sounding pipes. Then when the pumps were started, the inrush of fresh ballast water would cause the solution to be thoroughly mixed with the water. This method has the advantage of not only being economical but the thoroughness of the disinfection may be checked by taking ballast water samples from a vessel intercepted at any canal en route from port to port and sailing light. A serious objection is the corrosiveness of chlorine with its damaging effect on steel plate. As the concentration of free chlorine for 100 per cent sterilization of all bacteria would vary with the bacterial counts of different harbor waters, the chlorine dosage for a given case might be far in excess of the amount required, leaving some free chlorine to attack the steel. This might be obviated to a certain extent by dividing the harbor waters into classifications on the basis of plate counts of total bacteria and specifying a chlorine dosage for each class. Thus a ship leaving Montreal Harbor with ballast water would use a certain concentration of free chlorine which would be just sufficient or nearly so for the purpose, while another ship taking ballast in one of the upper lake canals would probably use a lesser amount.

In general, there do not seem to be any real physical difficulties in the way of effectively chlorinating ballast water. It has been shown that ballast water tanks are usually filthy, containing accumulations of rust and other sediment; and when to these tanks is added foul harbor water it is at once apparent that pollution of otherwise uncontaminated water, particularly near municipal intakes, is quite within the realm of possibility.

Further study was discontinued on this problem as it was felt that sufficient data had been gathered for present purposes and that direct pollution of Great Lakes waters by vessel sewage is a far more serious menace and one which should receive first attention, rather than the lesser menace of vessel ballast water.

## DEATH RATES IN A GROUP OF INSURED PERSONS

### Rates for Principal Causes of Death for November, 1931

The accompanying table, taken from the Statistical Bulletin for December, 1931, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial insurance department of the company for November as compared with that for the preceding month and for the corresponding month of last year. It also gives the cumulative rates for the period January–November for the years 1930 and 1931. The rates are based on a strength of approximately 19,000,000 insured persons in the United States and Canada. In recent years the general death rate in this more or less selected group of persons has averaged about 72 per cent of the rate for the registration area of the United States.

The Bulletin states:

In no previous November have health conditions among Metropolitan industrial policyholders been as favorable as during that month in 1931. The death rate was 7.7 per 1,000, as compared with the previous minimum of 7.8 in November, 1930. In only one other November (in 1924) has the death rate among insured wage earners fallen below 8 per 1,000.

The cumulative death rate for the 11 elapsed months of 1931 is only two-tenths of 1 per cent above the minimum—recorded in 1930. Furthermore, in December, 1931, lower mortality rates than those of December, 1930, prevailed up to the middle of the month. It is thus entirely possible that this slightly adverse margin will be wiped out by the end of the year. Mortality data for the general population of certain large cities show, up to the end of the forty-seventh week, a cumulative death rate of only 11.8 per 1,000, as compared with 11.9 for the corresponding period of 1930, thus indicating that the excellent health conditions prevailing among insured wage earners in 1931 have also obtained for the population in general. Among the insured who live in the Pacific Coast and Mountain States, and among those in Canada, markedly lower November death rates were registered than ever before, and the cumulative mortality for each of these large regions, up to the end of November, was well below the previous minimum.

With respect to four diseases, the facts are so clear cut that it is possible to announce, even before the close of the year, that the lowest mortality rates recorded to date will be registered this year. These are diphtheria, tuberculosis, diarrheal complaints, and puerperal conditions. There is also every prospect that a new minimum will be shown for typhoid fever, and there is an excellent chance that the mortality from chronic nephritis will be lower than ever before.

The reduction in the diphtheria death rate up to the end of November amounted to 28 per cent. The mortality from this disease has been reduced more than one-half in the brief period of 2 years; more than two-thirds in 7 years; and the death rate is now less than one-sixth the figure recorded 20 years ago. With the single exception of typhoid fever, diphtheria has recorded a greater per cent reduction in its death rate since 1911 than has any other cause of death. The mortality for measles and scarlet fever is running a little higher than in 1930, but the death rate for each is well below the average for the past 10 years; and in the case of each the rate represents only a small fraction of the figure registered 20 years ago. The whooping-cough mortality rate is about at the average for the past decade.

A very unusual development this year is an actual reduction in the pneumonia death rate in the face of a marked rise in that for influenza. Even during the influenza outbreak of last winter the pneumonia mortality did not increase to the extent usually observed during former periods of widespread prevalence of influenza; and after the epidemic had run its course, every month recorded a lower pneumonia death rate than did the corresponding month of 1930.

On the other side of the picture no doubt remains that new maximum death rates will be registered in 1931 for cancer, diabetes, and automobile fatalities, and the heart disease mortality rate will probably be higher than ever before.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	November, 1931	October, 1931	November, 1930	Cumulative, January to November	
				1931	1930
Total, all causes .....	771.6	780.2	775.2	876.3	874.8
Typhoid fever .....	2.2	4.9	2.7	2.2	2.3
Measles .....	.6	.5	.2	3.2	3.0
Scarlet fever .....	2.0	1.9	2.1	3.1	2.5
Whooping cough .....	2.9	3.3	2.3	3.6	4.4
Diphtheria .....	7.6	4.0	5.8	4.2	5.8
Influenza .....	8.1	5.2	10.9	21.1	14.5
Tuberculosis (all forms) .....	66.9	70.9	65.8	76.1	81.6
Tuberculosis of respiratory system .....	59.3	63.0	58.0	67.2	71.1
Cancer .....	83.6	79.7	72.2	82.4	77.7
Diabetes mellitus .....	20.5	18.4	16.3	20.6	18.4
Cerebral hemorrhage .....	54.6	55.7	56.1	60.6	60.1
Organic diseases of heart .....	131.0	125.8	131.8	147.1	144.3
Pneumonia (all forms) .....	56.3	41.3	67.4	74.7	75.9
Other respiratory diseases .....	8.3	8.4	9.4	10.3	11.1
Diarrhea and enteritis .....	12.2	27.0	19.2	16.1	21.1
Bright's disease (chronic nephritis) .....	65.2	58.4	61.4	66.2	67.7
Puerperal state .....	8.8	10.0	8.7	11.0	12.1
Suicides .....	8.0	10.0	9.7	9.7	9.7
Homicides .....	5.6	8.3	5.9	6.9	6.6
Other external causes (excluding suicides and homicides) .....	56.1	57.0	54.2	60.7	62.5
Traumatism by automobiles .....	23.0	25.4	21.3	21.7	20.5
All other causes .....	171.0	189.4	173.2	190.4	193.7

<sup>1</sup> All figures in this table include insured infants under 1 year of age. The rates for 1931 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Portion of narcotic act authorizing forfeiture of vehicle without notice to owner held invalid.*—(California District Court of Appeal, First District; *People v. Broad* (General Motors Acceptance Corporation, Intervener), 5 P. (2d) 55; decided Nov. 7, 1931.) A contract was entered into for the purchase by the defendant of an automobile and a part of the purchase price was paid. Under the contract, title was retained by the seller; but on the date of the execution of the contract, the interest of the seller therein, with title to the automobile, was transferred to the intervening corporation. The defendant subsequently pleaded guilty to a charge of violating the State narcotic act, and, in an action to forfeit the automobile because used in transporting narcotics, the lower court ordered it to be delivered to the State

department of finance. Section 15 of the narcotic law provided as follows:

Any automobile or other vehicle used to convey, carry, or transport any of the drugs mentioned in section 1 of this act, which are not lawfully possessed or transported, is hereby declared to be forfeited to the State and may be seized by any duly authorized peace officer, and when such seizure is made shall be considered as part of the evidence under this act, and the magistrate shall, upon conviction of the party charged with the violation of said act, turn the automobile or other vehicle over to the department of finance of the State of California, and said department of finance shall deliver to the division of narcotic enforcement of the State of California such number of said automobiles or other vehicles as may be needed by the said narcotic division in enforcing the provisions of this act: *Provided*, That nothing contained herein shall apply to common carriers or to an employee acting within the scope of his employment under this act.

On appeal by the intervener, the district court of appeal held that the portion of the act which purported to authorize a forfeiture without notice to the owner was invalid, as being a denial of due process.

## **PUBLIC HEALTH SERVICE PUBLICATIONS**

### **A List of Publications Issued During the Period July-December, 1931**

There is printed herewith a list of publications of the United States Public Health Service issued during the period July-December, 1931.

The most important articles that appear each week in the **PUBLIC HEALTH REPORTS** are reprinted in pamphlet form, making possible a wider and more economical distribution of information that is of especial value and interest to public-health workers and the general public.

All of the publications listed below except those marked with an asterisk (\*) are available for free distribution and as long as the supply lasts may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications marked with an asterisk are not available for free distribution but may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., *at the prices noted*. (No remittances should be sent to the Public Health Service.)

#### **Periodicals**

**Public Health Reports** (weekly), July-December, vol. 46, Nos. 27-52, pages 1613 to 3155.

**Venereal Disease Information** (monthly), July-December. Vol. XII, Nos. 7-12, pages 287 to 581. (Index to vol. XII included in December issue.)

## Reprints from the Public Health Reports

1489. Three outbreaks of food poisoning apparently due to *B. enteritidis*, *B. paratyphosus* B (æertrycke type), and *B. paratyphosus* A, respectively. By J. C. Geiger, Margaret Nelson, J. P. Gray, F. Firestone, and H. L. Wynns. July 3, 1931. 8 pages.
1490. Some essential considerations in connection with the rural health program. By W. F. Draper. July 10, 1931. 6 pages.
1491. Public Health Service Publications. A list of publications issued during the period January-June, 1931. July 10, 1931. 4 pages.
1492. The physical examination as an instrument of research. By Rollo H. Britten. July 17, 1931. 6 pages.
1493. A new subspecies, *radicans*, of *Alcaligenes faecalis*. By Alice C. Evans. July 17, 1931. 4 pages.
1494. The need for continued study in public-health work. By W. S. Leathers. July 24, 1931. 11 pages.
1495. The chemistry of cell division. II. The relation between cell growth and division in *amoeba proteus*. By H. W. Chalkley. July 24, 1931. 19 pages.
1496. Sickness among male industrial employees in the first quarter of 1931. By Dean K. Brundage. July 31, 1931. 2 pages.
1497. A study of illness among grade school children. By Charles C. Wilson, Ira V. Hiscock, J. H. Watkins, and Jarvis D. Case, with the cooperation of John L. Rice. July 31, 1931. 23 pages.
1498. Typhus fever. The rat flea, *Xenopsylla cheopis* in experimental transmission. By R. E. Dyer, E. T. Ceder, A. Rumreich, and L. F. Badger. August 7, 1931. 2 pages.
1499. Coordination in the sanitary control of bottled mineral waters. By W. S. Frisbie. August 7, 1931. 3 pages.
1500. Age and sex incidence of influenza and pneumonia morbidity and mortality in the epidemic of 1928-29 with comparative data for the epidemic of 1918-19. (Based on surveys of families in certain localities in the United States following the epidemics.) By Selwyn D. Collins. August 14, 1931. 29 pages.
1501. Dermatitis venenata due to contact with Brazilian walnut wood. By Louis Schwartz. August 14, 1931. 5 pages.
1502. Public health service in Knox county, Tennessee. Fiscal year July 1, 1929-June 30, 1930. By Joseph W. Mountin. August 21, 1931. 18 pages.
1503. A technique for adjustment of pH of hanging drop tissue cultures. By W. R. Earle. August 21, 1931. 11 pages.
1504. The medical profession and the health department. By A. J. McLaughlin. August 28, 1931. 7 pages.
1505. Expansion of investigations on tick-borne diseases by the United States Public Health Service. By R. R. Spencer. September 4, 1931. 5 pages.
1506. A survey of the work of employees' mutual benefit associations. By Dean K. Brundage. September 4, 1931. 18 pages.
1507. Cooperative campaign for the eradication of plague in Peru. Final report. By John D. Long. September 11, 1931. 8 pages.
1508. Occurrence of a colony of the tick parasite *Hunterellus hookeri* Howard in west Africa. By Cornelius B. Philip. September 11, 1931. 5 pages.
1509. Extent of rural health service in the United States 1927-1931. September 11, 1931. 14 pages.

1510. A note on the history of pellagra in the United States. By G. A. Wheeler. September 18, 1931. 7 pages.
1511. Sleeping car parking and sanitation at a large convention. By G. H. Ferguson. September 18, 1931. 5 pages.
1512. The catalytic action of copper in the oxidation of crystalline glutathione. By Carl Voegtlin, J. M. Johnson, and Sanford M. Rosenthal. September 18, 1931. 20 pages.
1513. Outbreak of undulant fever traced to infected milk supply. By H. E. Hasseltine and I. W. Knight. September 25, 1931. 10 pages.
1514. The functions and limitations of government in public health education. By Allan J. McLaughlin. September 25, 1931. 6 pages.
1515. Inspection of ships for determination of mosquito infestation. By W. F. Tanner. September 25, 1931. 15 pages.
1516. Present day problems of yellow fever. By Hugh S. Cumming. October 2, 1931. 6 pages.
1517. Experimental transmission of endemic typhus fever of the United States by the rat flea (*Xenopsylla cheopis*). By R. E. Dyer, E. T. Ceder, A. Rumreich, and L. F. Badger. October 9, 1931. 2 pages.
1518. Agglutinin absorption in undulant fever (Brucellosis). By Edward Francis. October 9, 1931. 21 pages.
1519. Double infection by organisms of the *Brucella* group. Report of a case. By Carl F. Jordan and I. H. Borts. October 9, 1931. 6 pages.
1520. Typhus fever. The experimental transmission of endemic typhus fever of the United States by the rat flea *Xenopsylla cheopis*. By R. E. Dyer, E. T. Ceder, R. D. Lillie, A. Rumreich, and L. F. Badger. October 16, 1931. 19 pages.
1521. Sickness among male industrial employees in the second quarter of 1931. By Dean K. Brundage. October 16, 1931. 3 pages.
1522. The effect of hemolytic streptococci and their products on leucocytes. By Alice C. Evans. October 23, 1931. 19 pages.
1523. Rat-flea survey of the port of St. Thomas, Virgin Islands. By E. H. Carnes. October 23, 1931. 5 pages.
1524. Dental decay and corrections among school children of different ages. Based on 12,435 oral examinations by dental personnel in Georgia, Illinois, Missouri, and Hagerstown, Md. (Studies in dental caries No. 1.) By Amanda L. Stoughton, and Verna Thornhill Meaker. October 30, 1931. 16 pages.
1525. The pellagra-preventive value of canned spinach, canned turnip greens, mature onions, and canned green beans. By G. A. Wheeler. November 6, 1931. 6 pages.
1526. A technique for adjustment of the pH of tissue cultures planted in Carrel flasks. By W. R. Earle. November 6, 1931. 3 pages.
1527. The movements of epidemic meningitis, 1915-1930. By A. W. Hedrich. November 13, 1931. 18 pages.
1528. Mosquitoes transported by airplanes. Staining method used in determining their importation. By T. H. D. Griffiths and J. J. Griffiths. November 20, 1931. 8 pages.
1529. Leprosy. A study of the white blood cells and their relation to clinical progress. By L. F. Badger. November 20, 1931. 20 pages.
1530. Pathology of the eastern type of Rocky Mountain spotted fever. By R. D. Lillie. November 27, 1931. 20 pages.
1531. State and insular health authorities, 1931. Directory, with data as to appropriations and publications. December 4, 1931. 23 pages.

1532. City health officers, 1931. Directory of those in cities of 10,000 or more population. December 4, 1931. 16 pages.
1533. The fumigation of vessels. A symposium. By C. L. Williams, B. E. Holsendorf, and J. R. Ridlon. July 3, July 10, July 17, July 24, July 31, August 14, August 28, and December 11, 1931. 81 pages.
1534. Microscopic examination for intestinal parasites of 73 boys in the National Training School for Boys, Washington, D. C. By C. E. Baker. December 11, 1931. 4 pages.
1535. Scarlet-fever streptococcus antitoxin in the treatment of scarlet fever. By M. V. Veldee, F. E. Stevenson, and A. Gracme Mitchell. December 18, 1931. 28 pages.
1536. Whole-time county health officers, 1931. December 18, 1931. 9 pages.
1537. Typhus fever: Typhus virus in feces of infected fleas (*Xenopsylla cheopis*) and duration of infectivity of fleas. By E. T. Ceder, R. E. Dyer, A. Rumreich, and L. F. Badger. December 25, 1931. 4 pages.
1538. *Anopheles atropos* D. & K.—A new potential carrier of malaria organisms. By Bruce Mayne and T. H. D. Griffiths. December 25, 1931. 9 pages.

#### Supplements to the Public Health Reports

93. The rat proofing of vessels.—With drawings illustrating the general instructions for rat proofing of ships compiled and promulgated by the American Marine Standards committee (H No. 41, approved February 8, 1929). By S. B. Grubbs and B. E. Holsendorf. 1931. 84 pages.
96. Proceedings of the conference of representatives of medical, dental, pharmaceutical, and veterinary associations and other scientific associations and agencies with the Surgeon General of the United States Public Health Service. Held at Washington, D. C., August 12, 1930. 1931. 77 pages.
97. Division of Mental Hygiene, United States Public Health Service. Laws establishing the division and authorizing its functions. 1931. 13 pages.
98. The notifiable diseases. Prevalence during 1930 in cities of over 100,000. 1931. 37 pages.
- \*101. Public health administration in Colorado. By C. E. Waller. 1931. 79 pages. 15 cents.
102. Some Public Health Service publications suitable for general distribution. 1931. 19 pages.

#### Public Health Bulletin

200. The health of the school child. A study of sickness, physical defects, and mortality. By Selwyn D. Collins, with an introduction by Taliaferro Clark. August, 1931. 159 pages.

#### Reprints from Venereal Disease Information

31. Some public health aspects of syphilis. By Taliaferro Clark. From Venereal Disease Information, Vol. XII, No. 5. 17 pages.
32. Prevalence of venereal diseases in Charleston, W. Va. By Taliaferro Clark and Elizabeth V. Milovich. From Venereal Disease Information, Vol. XII, No. 6. 11 pages.
33. The Kahn reaction in the blood serum of normal and syphilitic guinea pigs. By K. K. Bryant and J. F. Mahoney. From Venereal Disease Information, Vol. XII, No. 7. 4 pages.

34. A practical belt for mercury inunctions. By O. C. Wenger. From Venereal Disease Information, Vol. XII, No. 7. 2 pages.
35. The response of the Wassermann reaction to treatment in early syphilis as affected by the factors of race, sex, and pregnancy. By H. M. Robinson and Mildred H. Faupel. From Venereal Disease Information, Vol. XII, No. 8. 5 pages.
36. Prophylaxis and treatment of venereal disease in the United States. By Audrey G. Morgan. From Venereal Disease Information, Vol. XII, No. 8. 7 pages.
37. The control of gonorrhea. By Taliaferro Clark. From Venereal Disease Information, Vol. XII, No. 9. 9 pages.

### Unnumbered Publications

- \*To a patient en route to the marine hospital, Fort Stanton, N. Mex. 3 pages. 5 cents.
- \*Index to Public Health Reports, vol. 46, Part I (January-June, 1931). xxx pages. 5 cents.

### Annual Report

- \*Annual report of the Surgeon General of the Public Health Service of the United States for the fiscal year 1931. 354 pages. 85 cents.

## ANNUAL MORTALITY SUMMARY FOR 83 LARGE CITIES, 1931

*Number of deaths, death rates, and infant mortality in 83 large cities in 1931 (December 28, 1930, to January 2, 1932), and comparison with 1930*

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

City	Total deaths <sup>1</sup>	Death rate <sup>2</sup> (per 1,000 estimated population)	Deaths under 1 year <sup>1</sup>	Provisional infant mortality rate 1931 <sup>1,2</sup>	Infant mortality rate 1930	Mortality data for calendar year, 1930 <sup>4</sup>		
						Total deaths	Death rate (per 1,000 estimated population)	Deaths under 1 year
Total (83 cities).....	428,016	11.8	36,928	58	61	420,076	11.9	40,309
Akron.....	2,024	7.6	232	55	55	2,001	7.8	291
Albany.....	1,844	14.1	140	54	60	1,893	14.8	157
Atlanta <sup>4</sup> .....	4,206	14.9	438	80	94	4,205	15.5	496
White.....	2,162	11.5	226	63	65	2,099	11.6	228
Colored.....	2,044	21.6	212	114	148	2,106	23.2	268
Baltimore <sup>4</sup> .....	11,713	14.2	1,072	71	65	11,239	13.9	981
White.....	8,743	12.9	716	61	57	8,429	12.7	674
Colored.....	2,970	19.9	356	108	94	2,815	19.6	307
Birmingham <sup>4</sup> .....	3,566	13.0	322	63	78	3,548	13.6	404
White.....	1,696	10.0	161	50	55	1,623	10.0	168
Colored.....	1,870	17.9	161	82	111	1,925	19.3	236
Boston.....	11,221	14.1	1,068	60	70	11,018	14.1	1,263
Bridgeport.....	1,656	11.1	151	51	47	1,599	10.9	145
Buffalo.....	7,542	12.8	728	66	67	7,392	12.9	779
Cambridge.....	1,395	12.0	124	48	47	1,346	11.8	119
Camden.....	1,721	14.2	214	71	89	1,590	13.4	208
Canton.....	1,072	9.9	108	51	62	1,020	9.7	131
Chicago.....	36,656	10.4	3,036	56	54	35,316	10.4	3,112
Cincinnati.....	7,262	15.6	589	71	85	7,005	15.5	569
Cleveland.....	10,213	11.0	859	52	54	9,906	11.0	974
Columbus.....	4,025	13.4	276	52	71	4,470	15.3	380
Dallas <sup>4</sup> .....	3,060	11.0	372	( <sup>5</sup> )	( <sup>5</sup> )	3,012	11.5	393
White.....	2,231	9.7	283	( <sup>5</sup> )	( <sup>5</sup> )	2,153	9.9	258
Colored.....	829	17.2	89	( <sup>5</sup> )	( <sup>5</sup> )	859	19.0	135
Dayton.....	2,448	10.4	218	59	55	2,226	9.8	202
Denver.....	4,133	13.9	349	64	93	4,339	15.0	490

See footnotes at end of table.



*Number of deaths, death rates, and infant mortality in 83 large cities in 1931 (December 28, 1930, to January 2, 1932), and comparison with 1930—Continued*

City	Total deaths <sup>1</sup>	Death rate <sup>2</sup> (per 1,000 estimated population)	Deaths under 1 year <sup>1</sup>	Provisional infant mortality rate 1931 <sup>3</sup>	Infant mortality rate 1930	Mortality data for calendar year, 1930 <sup>4</sup>		
						Total deaths	Death rate (per 1,000 estimated population)	Deaths under 1 year <sup>*</sup>
Des Moines.....	1,610	11.0	124	40	51	1,718	12.0	139
Detroit.....	13,627	8.1	1,621	55	65	14,729	9.3	2,134
Duluth.....	1,151	11.1	92	50	62	1,185	11.7	119
El Paso.....	1,592	14.9	300	( <sup>5</sup> )	( <sup>5</sup> )	1,822	17.7	353
Erie.....	1,253	10.5	103	41	50	1,308	11.2	125
Fall River <sup>7</sup> .....	1,298	11.1	131	65	66	1,323	11.5	146
Flint.....	1,130	6.8	175	48	68	1,399	8.9	284
Fort Worth <sup>6</sup> .....	1,780	10.5	151	( <sup>5</sup> )	( <sup>5</sup> )	1,806	11.0	188
White.....	1,443	10.1	128	( <sup>5</sup> )	( <sup>5</sup> )	1,378	10.0	131
Colored.....	337	12.2	23	( <sup>5</sup> )	( <sup>5</sup> )	428	16.2	57
Grand Rapids.....	1,575	9.0	131	42	48	1,697	10.0	165
Houston <sup>6</sup> .....	3,473	11.0	356	( <sup>5</sup> )	( <sup>5</sup> )	3,598	12.2	419
White.....	2,343	10.2	274	( <sup>5</sup> )	( <sup>5</sup> )	2,103	9.7	214
Colored.....	1,130	13.4	82	( <sup>5</sup> )	( <sup>5</sup> )	1,495	19.0	205
Indianapolis <sup>6</sup> .....	5,098	13.6	368	56	64	5,193	14.2	434
White.....	4,309	13.1	310	54	61	4,326	13.5	330
Colored.....	789	17.2	58	75	122	867	19.6	104
Jersey City.....	3,626	11.2	432	67	72	3,578	11.3	421
Kansas City, Kans. <sup>6</sup> .....	1,543	12.4	139	58	66	1,674	13.7	156
White.....	1,181	11.7	117	59	68	1,337	13.5	132
Colored.....	362	15.2	22	53	59	341	14.9	24
Kansas City, Mo.....	5,318	12.8	422	90	68	5,301	13.2	440
Knoxville <sup>6</sup> .....	1,376	12.4	167	79	81	1,500	14.1	195
White.....	1,080	11.6	145	76	80	1,190	13.2	170
Colored.....	296	16.4	22	112	93	320	18.5	25
Long Beach.....	1,528	9.9	55	27	41	1,490	10.4	85
Los Angeles.....	14,463	10.8	1,047	58	62	14,028	11.2	1,103
Louisville <sup>6</sup> .....	4,283	13.7	360	62	67	4,390	14.3	385
White.....	3,254	12.3	265	52	63	3,286	12.6	315
Colored.....	1,029	21.2	95	133	96	1,104	23.2	70
Lowell <sup>7</sup> .....	1,320	13.0	143	70	78	1,323	13.2	155
Lynn.....	991	9.5	69	37	55	1,057	10.3	100
Memphis <sup>6</sup> .....	4,298	16.3	472	97	102	4,398	17.3	500
White.....	2,162	13.3	241	77	81	2,124	13.5	251
Colored.....	2,136	21.2	231	131	139	2,274	23.5	249
Miami <sup>6</sup> .....	1,324	11.6	95	50	58	1,232	11.1	118
White.....	949	10.7	48	35	44	850	9.9	64
Colored.....	375	14.6	47	89	94	382	15.2	54
Milwaukee.....	5,423	9.0	618	55	58	5,568	9.6	674
Minneapolis.....	5,220	10.8	477	58	55	5,056	10.8	448
Nashville <sup>6</sup> .....	2,636	16.7	298	84	99	2,510	16.3	343
White.....	1,661	14.4	191	71	87	1,520	13.7	229
Colored.....	985	22.6	107	126	138	990	23.1	114
New Bedford <sup>7</sup> .....	1,372	12.0	160	87	54	1,242	11.0	108
New Haven.....	2,074	12.5	121	45	48	2,116	13.0	163
New Orleans <sup>6</sup> .....	7,843	16.5	716	77	88	8,030	17.4	821
White.....	4,556	13.5	368	60	71	4,741	14.4	441
Colored.....	3,287	24.0	348	107	120	3,289	25.0	330
New York.....	78,687	10.9	6,523	55	58	74,913	10.8	7,073
Bronx Borough.....	10,894	8.1	772	42	41	10,069	7.9	748
Brooklyn Borough.....	26,907	10.1	2,617	54	56	25,252	9.8	2,756
Manhattan Borough.....	30,357	16.4	2,381	64	71	29,680	16.0	2,767
Queens Borough.....	8,291	7.1	609	48	50	7,717	7.1	651
Richmond Borough.....	2,238	13.5	144	63	55	2,195	13.8	151
Newark, N. J.....	5,173	11.4	467	48	51	5,263	11.9	500
Oakland.....	3,241	10.9	179	42	47	3,178	11.1	194
Oklahoma City.....	2,126	10.6	260	67	83	2,105	11.2	309
Omaha.....	3,013	13.7	238	51	50	2,819	13.1	225
Paterson.....	1,865	13.1	162	55	61	1,069	12.0	137
Peoria.....	1,355	12.3	131	68	63	1,300	12.3	125
Philadelphia.....	25,657	12.8	2,210	64	64	24,516	12.5	2,287
Pittsburgh.....	9,702	14.1	1,033	89	69	9,312	13.9	1,032
Portland, Oreg.....	3,645	11.7	137	38	41	3,675	12.1	173
Providence.....	3,260	12.6	310	55	53	3,259	12.9	300
Richmond <sup>6</sup> .....	2,885	15.4	264	75	73	2,737	14.9	263
White.....	1,741	13.0	128	54	61	1,605	12.3	120
Colored.....	1,144	21.3	136	117	119	1,132	21.4	143

See footnotes at end of table,

**Number of deaths, death rates, and infant mortality in 85 large cities in 1931 (December 29, 1930, to January 2, 1932), and comparison with 1930—Continued**

City	Total deaths <sup>1</sup>	Death rate <sup>2</sup> (per 1,000 estimated population)	Deaths under 1 year <sup>1</sup>	Provisional infant mortality rate 1931 <sup>2,3</sup>	Infant mortality rate 1930	Mortality data for calendar year, 1930 <sup>4</sup>		
						Total deaths	Death rate (per 1,000 estimated population)	Deaths under 1 year
Rochester.....	3,943	11.7	291	52	51	3,786	11.5	289
St. Louis.....	12,327	14.6	787	53	54	11,482	13.9	787
St. Paul.....	2,902	10.3	168	34	43	2,879	10.6	218
Salt Lake City.....	1,733	11.9	139	41	54	1,822	12.9	187
San Antonio.....	3,429	14.1	569	( <sup>5</sup> )	( <sup>5</sup> )	3,733	16.0	603
San Diego.....	2,186	13.8	113	46	49	2,167	14.5	122
San Francisco.....	8,636	13.1	322	42	40	8,311	13.0	315
Schenectady.....	1,066	10.9	81	44	47	1,051	11.0	83
Seattle.....	4,293	11.4	168	31	38	4,007	10.9	199
Somerville.....	952	8.9	70	53	64	1,008	9.7	107
South Bend.....	879	8.0	80	44	49	954	9.1	99
Spokane.....	1,458	12.3	97	40	47	1,448	12.5	95
Springfield, Mass.....	1,772	11.4	144	46	53	1,771	11.8	164
Syracuse.....	2,484	11.5	241	58	56	2,461	11.7	240
Tacoma.....	1,365	12.5	90	47	45	1,370	12.8	84
Tampa <sup>6</sup> .....	1,252	11.7	119	64	58	1,178	11.6	106
White.....	904	10.7	69	45	43	836	10.4	64
Colored.....	348	15.4	50	149	127	342	15.9	42
Toledo.....	3,544	11.7	277	56	56	3,680	12.6	312
Trenton.....	2,042	16.2	160	60	78	1,893	15.3	224
Utica.....	1,489	14.3	71	38	68	1,510	14.8	127
Washington, D. C. <sup>7</sup> .....	7,925	15.9	685	72	71	7,387	15.1	664
White.....	4,897	13.5	323	50	52	4,565	13.0	327
Colored.....	3,028	22.1	362	121	110	2,792	20.9	337
Waterbury.....	966	9.4	108	67	62	1,060	10.6	129
Wilmington, Del. <sup>7</sup> .....	1,500	13.8	149	63	71	1,560	14.6	163
Worcester.....	2,414	12.0	173	46	63	2,498	12.8	228
Yonkers.....	1,169	8.3	106	51	48	1,132	8.4	103
Youngstown.....	1,709	9.7	177	54	58	1,782	10.5	218

<sup>1</sup> Based upon telegraphic reports received each week from city health officers

<sup>2</sup> Allowance has been made for the 6 extra days, which must be deducted from the 53 weeks to give a period of 365 days

<sup>3</sup> Infant mortality rate is based upon deaths under 1 year as returned each week and estimated births, 1931.

<sup>4</sup> Based upon deaths which occurred within the calendar year

<sup>5</sup> Infant mortality rate for the cities in the birth registration area appearing in the summary.

<sup>6</sup> For the cities for which deaths are shown by color the percentage of colored population in 1930 was as follows: Atlanta, 33, Baltimore, 18, Birmingham, 38, Dallas, 17, Fort Worth, 16, Houston, 27, Indianapolis, 12, Kansas City, Kans., 19, Knoxville, 16, Louisville, 15, Memphis, 38, Miami, 23, Nashville, 28, New Orleans, 29, Richmond, 29, Tampa, 21, and Washington, D. C., 27.

<sup>7</sup> Mortality rates based upon population Apr. 1, 1930, decreased 1920 to 1930, no estimate made.

<sup>8</sup> Cities with no infant mortality rate are not in the registration area for births.

## DEATHS DURING WEEK ENDED JANUARY 9, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended January 9, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Jan. 9, 1932	Correspond- ing week, 1931
Policies in force.....	74, 255, 940	75, 144, 856
Number of death claims.....	13, 082	15, 212
Death claims per 1,000 policies in force, annual rate.....	9. 2	10. 6

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 9, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Jan. 9, 1932				Corresponding week, 1931	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year
Total (83 cities).....	9,066	13.0	633	54	14.1	877
Akron.....	53	10.4	4	50	9.5	5
Albany <sup>4</sup> .....	46	18.4	3	61	17.0	3
Atlanta <sup>5</sup> .....	110	20.3	10	97	16.5	7
White.....	53	14.8	8	118	15.3	4
Colored.....	57	31.1	2	57	19.0	3
Baltimore <sup>6</sup> .....	236	15.0	27	96	15.6	23
White.....	183	14.3	18	82	14.9	17
Colored.....	53	18.4	9	145	19.2	6
Birmingham <sup>6</sup> .....	81	15.3	10	104	15.7	5
White.....	43	13.1	7	115	8.8	2
Colored.....	38	18.9	3	81	26.0	3
Boston.....	237	15.7	20	90	14.7	23
Bridgeport.....	39	13.8	7	125	16.7	4
Buffalo.....	160	14.2	10	48	13.4	15
Cambridge.....	36	16.4	3	62	13.7	4
Camden.....	29	12.7	5	88	17.5	4
Canton.....	23	11.1	3	75	9.3	0
Chicago <sup>6</sup> .....	834	12.4	70	69	11.5	66
Cincinnati.....	144	16.3	4	26	21.8	11
Cleveland.....	214	12.1	13	42	11.3	15
Columbus.....	109	19.0	6	60	15.0	1
Dallas <sup>6</sup> .....	66	12.2	6	-----	14.5	6
White.....	43	9.6	2	-----	13.4	6
Colored.....	23	24.7	4	-----	19.8	0
Dayton.....	50	11.0	5	72	14.4	7
Denver.....	139	24.7	9	88	16.4	12
Des Moines.....	30	10.7	0	0	12.6	3
Detroit.....	300	9.1	22	40	8.7	38
Duluth.....	20	10.3	3	87	13.3	1
El Paso.....	36	17.6	4	-----	26.3	19
Erie.....	20	8.8	0	0	10.2	3
Fall River <sup>17</sup> .....	24	10.9	1	27	11.8	1
Flint.....	30	9.2	4	59	7.0	4
Fort Worth <sup>6</sup> .....	30	9.2	3	-----	15.0	7
White.....	22	8.0	2	-----	11.9	5
Colored.....	8	15.7	1	-----	30.7	2
Grand Rapids.....	23	6.9	0	0	7.6	3
Houston <sup>6</sup> .....	70	11.3	2	-----	12.6	7
White.....	45	9.9	1	-----	12.2	6
Colored.....	25	15.2	1	-----	13.8	1
Indianapolis <sup>6</sup> .....	106	14.8	7	57	14.5	8
White.....	84	13.4	5	46	14.1	7
Colored.....	22	25.0	2	137	17.3	1
Jersey City.....	78	12.7	4	33	12.7	9
Kansas City, Kans. <sup>6</sup> .....	40	16.9	3	66	16.1	5
White.....	35	18.3	3	80	14.7	3
Colored.....	5	11.0	0	0	22.2	2
Kansas City, Mo.....	71	8.9	2	23	14.7	15
Knoxville <sup>6</sup> .....	19	8.9	2	51	15.8	8
White.....	14	7.8	2	56	13.1	2
Colored.....	5	14.3	0	0	29.3	1
Long Beach.....	39	12.7	2	52	9.9	3
Los Angeles.....	351	13.3	16	47	14.8	29
Louisville <sup>6</sup> .....	84	14.2	7	64	25.4	14
White.....	65	13.0	5	52	24.0	10
Colored.....	19	20.8	2	149	32.8	4
Lowell <sup>7</sup> .....	25	13.0	1	26	14.6	1
Lynn.....	27	13.7	3	85	14.2	3
Memphis <sup>6</sup> .....	78	15.5	7	78	17.7	7
White.....	38	12.2	3	51	17.3	3
Colored.....	40	20.8	4	120	18.5	4
Miami <sup>6</sup> .....	32	14.7	0	0	10.2	8
White.....	23	13.6	0	0	10.6	1
Colored.....	9	18.6	0	0	8.2	2

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 9, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended Jan. 9, 1932				Corresponding week, 1931	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year
Milwaukee.....	124	10.8	11	52	10.6	13
Minneapolis.....	93	10.1	5	33	14.1	19
Nashville <sup>4</sup> .....	48	16.0	1	15	16.4	8
White.....	32	14.7	0	0	13.4	5
Colored.....	16	19.5	1	62	24.4	3
New Bedford <sup>7</sup> .....	30	13.9	4	115	15.3	5
New Haven.....	41	13.2	1	20	14.1	3
New Orleans <sup>6</sup> .....	157	17.3	9	51	21.7	17
White.....	93	14.4	6	52	18.6	9
Colored.....	64	24.4	3	49	29.4	8
New York.....	1,663	12.0	106	47	14.1	154
Bronx Borough.....	250	9.5	12	35	9.3	21
Brooklyn Borough.....	526	10.3	42	46	13.4	57
Manhattan Borough.....	631	18.6	38	50	21.3	59
Queens Borough.....	200	8.6	12	39	9.6	16
Richmond Borough.....	56	17.5	2	59	15.6	1
Newark, N. J.....	96	11.2	11	60	12.8	13
Oakland.....	71	12.4	7	88	15.9	7
Oklahoma City.....	47	11.9	5	68	12.5	7
Omaha.....	60	14.3	5	56	13.7	6
Paterson.....	42	15.8	1	18	13.1	2
Peoria.....	28	13.2	0	0	14.9	0
Philadelphia.....	541	14.3	35	54	15.6	42
Pittsburgh.....	211	16.2	20	92	16.6	32
Portland, Oreg.....	85	14.3	0	0	15.6	1
Providence.....	90	18.4	2	19	16.8	9
Richmond <sup>6</sup> .....	65	18.3	6	90	16.7	4
White.....	42	16.6	3	67	16.3	4
Colored.....	23	22.8	3	138	17.7	0
Rochester.....	74	11.5	3	29	14.8	4
St. Louis.....	214	13.4	19	68	16.7	31
St. Paul.....	50	9.3	6	64	11.9	5
Salt Lake City <sup>4</sup> .....	37	13.3	3	47	13.9	4
San Antonio.....	59	12.5	6	—	15.2	13
San Diego.....	46	14.7	0	0	19.3	5
San Francisco.....	216	17.0	10	69	12.6	3
Schenectady.....	21	11.4	1	29	8.7	1
Seattle.....	88	12.2	0	0	12.6	4
Somerville.....	27	13.3	3	121	14.4	4
South Bend.....	17	8.0	0	0	5.8	1
Spokane.....	36	16.1	0	0	10.8	1
Springfield, Mass.....	41	13.9	3	51	11.6	2
Syracuse.....	41	9.9	3	39	13.7	7
Tacoma.....	20	9.6	1	28	13.1	1
Tampa <sup>6</sup> .....	21	10.2	1	29	19.9	4
White.....	17	10.4	0	0	18.3	2
Colored.....	4	9.2	1	158	25.8	2
Toledo.....	65	11.3	4	43	12.3	10
Trenton.....	45	18.9	2	40	26.5	8
Julia.....	23	11.7	0	0	14.8	0
Washington, D. C. <sup>4</sup> .....	133	14.1	10	56	19.4	14
White.....	83	12.1	4	33	17.3	6
Colored.....	50	19.1	6	107	25.1	8
Waterbury.....	17	8.7	2	66	8.8	1
Wilmington, Del. <sup>7</sup> .....	33	16.2	5	113	19.1	5
Worcester.....	55	14.5	9	126	13.0	2
Yonkers.....	24	8.8	2	52	10.5	0
Youngstown.....	32	9.5	3	49	15.1	8

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 36; Dallas, 17; Fort Worth, 16; Houston, 37; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

*These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers*

**Reports for Weeks Ended January 16, 1932, and January 17, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 16, 1932, and January 17, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931
<b>New England States:</b>								
Maine.....	5	5	51	4	541	21	0	0
New Hampshire.....	2	2	1		15	45	0	0
Vermont.....					205	25	0	0
Massachusetts.....	60	77	35	17	450	409	3	1
Rhode Island.....	8	7			789		0	1
Connecticut.....	7	10	6	82	122	192	2	1
<b>Middle Atlantic States:</b>								
New York.....	172	135	128	1,005	1,048	279	10	14
New Jersey.....	32	56	16	282	60	313	1	6
Pennsylvania.....	128	129			93	966	6	2
<b>East North Central States:</b>								
Ohio.....	99	62	44	34	374	126	1	6
Indiana.....	107	64	47	5	53	197	11	16
Illinois.....	134	165	67	41	63	555	4	14
Michigan.....	49	58	1	5	140	82	4	5
Wisconsin.....	30	15	21	38	264	229	1	3
<b>West North Central States:</b>								
Minnesota.....	17	14	4	1	22	16	1	3
Iowa.....	18	10			3	5	0	2
Missouri.....	43	37	4	12	15	1,012	0	3
North Dakota.....	1	5			42		0	0
South Dakota.....	12	15	4		61	3	0	1
Nebraska.....	13	6		7	22	16	0	3
Kansas.....	48	22	2	4	28	19	2	1
<b>South Atlantic States:</b>								
Delaware.....	6	2	2		1	3	0	0
Maryland <sup>1</sup> .....	46	24	43	113	16	160	0	1
District of Columbia.....	19	10		10	1	17	0	0
Virginia.....							2	4
West Virginia.....	38	23	18	33	379	47	0	1
North Carolina.....	49	42	23	112	115		4	4
South Carolina.....	15	11	431	1,078	69		0	0
Georgia <sup>1</sup> .....	9	16	57	168	2		1	2
Florida.....	29	13	3	6	16	66	0	2

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended January 16, 1932, and January 17, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931
<b>East South Central States:</b>								
Kentucky.....	55	23	127	2	59	—	0	4
Tennessee.....	43	10	81	121	22	96	5	2
Alabama.....	48	22	42	126	2	370	1	4
Mississippi.....	23	20	—	—	—	—	0	2
<b>West South Central States:</b>								
Arkansas.....	15	8	7	101	5	1	0	2
Louisiana.....	29	26	14	77	5	2	2	5
Oklahoma <sup>4</sup> .....	57	38	66	169	21	16	0	1
Texas <sup>4</sup> .....	134	41	46	85	2	9	1	1
<b>Mountain States</b>								
Montana.....	2	7	2	—	117	3	1	0
Idaho.....	1	1	—	1	1	29	1	1
Wyoming.....	1	—	—	—	3	1	0	0
Colorado.....	8	12	—	—	7	49	2	4
New Mexico.....	21	4	5	1	4	35	0	4
Arizona.....	6	12	17	3	5	50	1	7
Utah <sup>1</sup> .....	1	—	—	12	—	3	0	4
<b>Pacific States:</b>								
Washington.....	3	10	—	—	224	76	2	3
Oregon.....	2	2	58	49	13	57	0	0
California.....	89	63	177	63	250	363	3	8
Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931
<b>New England States:</b>								
Maine.....	1	1	29	14	0	0	2	2
New Hampshire.....	0	0	13	10	0	0	0	1
Vermont.....	0	0	2	8	12	0	0	1
Massachusetts.....	2	2	495	334	17	0	5	4
Rhode Island.....	0	1	42	30	0	0	0	0
Connecticut.....	0	0	70	68	8	0	0	2
<b>Middle Atlantic States:</b>								
New York.....	5	7	893	694	4	14	17	13
New Jersey.....	0	0	238	250	0	1	1	4
Pennsylvania.....	3	4	565	557	0	1	12	20
<b>East North Central States:</b>								
Ohio.....	2	7	577	550	35	117	8	11
Indiana.....	2	1	124	266	14	94	3	0
Illinois.....	6	9	386	512	21	72	14	5
Michigan.....	1	2	313	373	5	48	3	2
Wisconsin.....	1	3	83	138	6	3	2	0
<b>West North Central States:</b>								
Minnesota.....	0	2	94	62	6	8	0	3
Iowa.....	0	0	46	101	41	60	0	1
Missouri.....	0	2	75	126	10	80	2	2
North Dakota.....	0	0	10	18	4	7	1	0
South Dakota.....	0	0	10	16	21	57	2	1
Nebraska.....	0	1	27	41	5	63	0	0
Kansas.....	0	0	72	60	2	172	3	4
<b>South Atlantic States:</b>								
Delaware.....	0	0	3	16	0	0	0	0
Maryland <sup>2</sup> .....	0	0	106	106	0	0	4	6
District of Columbia.....	0	0	23	26	0	0	2	2
Virginia.....	—	—	—	—	—	1	—	—
West Virginia.....	0	0	48	48	2	11	14	2
North Carolina.....	6	2	85	81	1	3	10	4
South Carolina.....	1	7	9	24	0	2	15	5
Georgia <sup>3</sup> .....	0	1	10	66	0	0	8	1
Florida.....	0	1	10	15	0	0	5	1

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Jan. 16, 1932, 2 cases: 1 case in Georgia and 1 case in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 16, 1932, and January 17, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931	Week ended Jan. 16, 1932	Week ended Jan. 17, 1931
<b>East South Central States.</b>								
Kentucky.....	2	0	157	75	4	2	23	3
Tennessee.....	0	1	73	23	12	7	14	3
Alabama.....	0	0	36	48	157	2	21	4
Mississippi.....	0	0	28	19	16	14	4	3
<b>West South Central States:</b>								
Arkansas.....	1	0	13	15	33	29	6	4
Louisiana.....	0	1	26	26	7	12	10	6
Oklahoma <sup>4</sup> .....	1	1	48	60	9	50	7	8
Texas <sup>1</sup> .....	1	1	62	63	28	187	5	4
<b>Mountain States:</b>								
Montana.....	0	0	22	43	2	18	2	1
Idaho.....	0	0	6	17	3	4	1	0
Wyoming.....	0	0	7	7	0	0	0	0
Colorado.....	0	0	47	41	2	11	1	3
New Mexico.....	1	1	10	10	1	2	4	3
Arizona.....	0	0	12	8	1	1	0	0
Utah <sup>2</sup> .....	0	0	8	11	0	0	1	1
<b>Pacific States:</b>								
Washington.....	0	1	44	54	17	34	1	3
Oregon.....	0	0	24	16	31	25	2	1
California.....	2	10	158	137	12	156	2	6

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Jan. 16, 1932, 2 cases 1 case in Georgia and 1 case in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Infl- uenza	Ma- laria	Mea- sles	Pellag- ra	Pollo- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1931</i>										
Delaware.....	2	144	4		2		0	36	0	3
<i>December, 1931</i>										
Delaware.....		53			6		1	33	0	3
District of Columbia.....	3	574	228		6		1	81	0	3
Florida.....	3	54	6	32	4	5	1	36	3	15
Massachusetts.....	8	260	31		1,229	4	19	1,495	0	32
Michigan.....	15	264	16	1	294		15	1,231	46	39
New Mexico.....	2	94	2	1	23	1	1	60	1	30
North Dakota.....	1	53	1		48		3	89	49	2
Ohio.....	9	535	94		534		12	2,071	77	67
Vermont.....		2			566		2	49	54	1
Wyoming.....		11			26		0	43	4	1

<i>November, 1931</i>		<i>Mumps—Continued.</i>	
Delaware:	Cases		Cases
Chicken pox.....	13	Vermont.....	48
Mumps.....	5	Wyoming.....	44
Whooping cough.....	28	Ophthalmia neonatorum:	
		Massachusetts.....	80
		Ohio.....	37
		Puerperal septicemia:	
		Ohio.....	6
		Septic sore throat:	
		Massachusetts.....	30
		Michigan.....	30
		New Mexico.....	1
		Ohio.....	98
		Tetanus:	
		Massachusetts.....	2
		Ohio.....	2
		Trachoma:	
		Massachusetts.....	4
		North Dakota.....	2
		Ohio.....	1
		Trichinosis:	
		Massachusetts.....	1
		Tularemia:	
		Michigan.....	3
		New Mexico.....	1
		Ohio.....	45
		Wyoming.....	2
		Typhus fever	
		District of Columbia.....	1
		Florida.....	3
		Undulant fever:	
		District of Columbia.....	1
		Massachusetts.....	2
		Michigan.....	3
		Ohio.....	11
		Vermont.....	3
		Vincent's angina.	
		North Dakota.....	24
		Whooping cough.	
		Delaware.....	30
		District of Columbia.....	70
		Florida.....	13
		Massachusetts.....	728
		Michigan.....	968
		New Mexico.....	6
		North Dakota.....	11
		Ohio.....	1,639
		Vermont.....	156
		Wyoming.....	10

### RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of December, 1931, by departments of health of States named to other State health departments*

Disease	California	Connecticut	Illinois	Massachusetts	Minnesota	New Jersey	New York
Diphtheria.....					1		1
Dysentery (amoebic).....				1			1
Measles.....							1
Paratyphoid fever.....							1
Trachoma.....			3				
Tuberculosis.....	10		7		21		
Tularaemia.....					1		
Typhoid fever.....		1			1		1
Undulant fever.....						1	



# **PATIENTS IN INSTITUTIONS FOR FEEBLE-MINDED, OCTOBER TO DECEMBER, 1929**

Reports for the fourth quarter of the year 1929 were received by the Public Health Service from 30 institutions for the care of the feeble-minded, located in 25 States. The total number of patients in these institutions on December 31, 1929, including those on temporary leave or otherwise absent but still on the books, was 34,789.

The first admissions were as follows:

	Male	Female	Total
October.....	208	162	370
November.....	168	161	329
December.....	120	106	226
Total.....	496	429	925

Of the first admissions during the three months, 53.6 per cent were males and 46.4 per cent were females, the ratio being 116 males per 100 females.

One hundred and seventy-six male patients and 208 female patients were discharged and 101 males and 71 females died during the three months. The annual death rates, based on the number of patients on the books December 31, 1929, were: Males, 23.2 per 1,000; females, 16.1 per 1,000; persons, 19.6 per 1,000.

The following table shows the number of patients in the institutions and on temporary leave on October 1, 1929, and at the end of each month of the fourth quarter of 1929, and the percentages of the total patients who were on leave:

	Oct. 1, 1929	Oct. 31, 1929	Nov. 30, 1929	Dec. 31, 1929
<b>Patients in institutions:</b>				
Male.....	14,408	14,564	14,592	14,340
Female.....	15,266	15,342	15,380	15,237
Total.....	29,664	29,906	29,972	29,576
<b>Patients on temporary leave:</b>				
Male.....	2,615	2,592	2,626	2,904
Female.....	2,122	2,114	2,165	2,299
Total.....	4,737	4,706	4,791	5,203
<b>Total patients on books:</b>				
Male.....	17,023	17,156	17,218	17,253
Female.....	17,378	17,466	17,645	17,636
Total.....	34,401	34,612	34,763	34,789
<b>Per cent of total patients on temporary leave:</b>				
Male.....	15.4	15.1	15.3	16.8
Female.....	12.2	12.1	12.3	13.1
Total.....	13.8	13.6	13.8	15.0

**GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES**

The 95 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,819,000. The estimated population of the 88 cities reporting deaths is more than 32,260,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended January 9, 1932, and January 10, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
<b>Diphtheria:</b>			
46 States.....	1,760	1,365	
95 cities.....	537	523	870
<b>Measles:</b>			
46 States.....	6,567	6,883	
95 cities.....	1,905	2,214	
<b>Meningococcus meningitis:</b>			
46 States.....	88	157	
95 cities.....	53	60	
<b>Polioomyelitis:</b>			
46 States.....	48	40	
<b>Scarlet fever:</b>			
46 States.....	4,694	4,871	
95 cities.....	1,773	1,762	1,369
<b>Smallpox:</b>			
46 States.....	483	895	
95 cities.....	38	61	33
<b>Typhoid fever:</b>			
46 States.....	281	170	
95 cities.....	27	25	31
<i>Deaths reported</i>			
<b>Influenza and pneumonia:</b>			
88 cities.....	1,000	1,233	
<b>Smallpox:</b>			
88 cities.....	0	0	

## City reports for week ended January 9, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	8	0	2	-----	0	130	0	2
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	1
Nashua.....	4	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	1	1
Burlington.....	1	0	0	-----	0	21	2	0
Massachusetts:								
Boston.....	66	3	13	1	2	13	30	41
Fall River.....	5	4	3	-----	1	4	0	1
Springfield.....	13	5	1	-----	0	3	40	1
Worcester.....	18	4	4	-----	0	1	103	4
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	0	8	7	-----	0	561	38	9
Connecticut:								
Bridgeport.....	8	6	1	1	1	0	0	5
Hartford.....	14	6	2	1	0	0	9	0
New Haven.....	15	1	0	1	0	0	16	4
MIDDLE ATLANTIC								
New York:								
Buffalo.....	38	12	8	-----	2	3	3	30
New York.....	244	196	85	26	13	32	78	175
Rochester.....	35	6	0	-----	0	63	30	4
Syracuse.....	20	2	0	-----	0	7	5	7
New Jersey:								
Camden.....	8	8	4	1	1	0	1	3
Newark.....	100	18	4	5	0	1	12	15
Trenton.....	4	2	0	1	0	2	10	1
Pennsylvania:								
Philadelphia.....	143	63	6	4	7	6	31	67
Pittsburgh.....	46	19	7	1	5	212	50	32
Reading.....	12	1	0	-----	0	4	1	1
Scranton.....	2	-----	0	-----	0	0	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	4	10	0	-----	2	0	0	11
Cleveland.....	146	31	2	27	2	153	103	30
Columbus.....	25	4	17	-----	2	5	7	5
Toledo.....	88	8	6	1	1	1	4	3
Indiana:								
Fort Wayne.....	5	4	22	-----	1	0	0	4
Indianapolis.....	72	7	6	-----	1	1	64	14
South Bend.....	9	1	0	-----	0	0	0	0
Terre Haute.....	10	0	0	-----	0	0	0	1
Illinois:								
Chicago.....	140	108	49	20	10	27	5	63
Springfield.....	-----	1	-----	-----	-----	-----	-----	-----
Michigan:								
Detroit.....	59	54	22	1	3	4	7	26
Flint.....	87	3	3	-----	0	4	52	3
Grand Rapids.....	10	1	1	-----	1	27	14	3

## City reports for week ended January 9, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha.....	14	0	2	-----	0	0	0	0
Madison.....	4	1	2	-----	-----	1	0	-----
Milwaukee.....	129	18	3	5	2	15	40	11
Racine.....	21	1	0	-----	0	2	49	0
Superior.....	0	0	0	-----	0	1	28	2
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	11	1	0	-----	0	0	1	3
Minneapolis.....	57	16	6	-----	2	0	10	9
St. Paul.....	26	5	4	-----	0	3	6	3
Iowa:								
Davenport.....	0	0	0	-----	-----	0	0	-----
Des Moines.....	0	1	1	-----	-----	0	0	-----
Sioux City.....	13	1	5	-----	-----	0	1	-----
Waterloo.....	15	0	0	-----	-----	0	0	-----
Missouri:								
Kansas City.....	41	6	14	-----	0	3	9	5
St. Joseph.....	2	1	1	-----	0	0	0	2
St. Louis.....	20	42	20	2	1	1	1	8
North Dakota:								
Fargo.....	-----	0	-----	-----	-----	-----	-----	-----
Grand Forks.....	1	0	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	14	0	0	-----	-----	21	0	-----
Nebraska:								
Omaha.....	20	5	9	-----	0	3	0	7
Kansas:								
Topeka.....	11	1	2	-----	0	0	0	1
Wichita.....	21	2	9	-----	0	24	0	8
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	11	3	0	-----	0	0	4	9
Maryland:								
Baltimore.....	63	23	11	14	5	1	52	26
Cumberland.....	2	0	1	-----	0	0	0	1
Frederick.....	0	0	3	-----	0	0	0	0
District of Columbia:								
Washington.....	9	16	19	3	2	2	0	15
Virginia:								
Lynchburg.....	3	2	2	-----	2	0	0	2
Norfolk.....	17	2	4	1	0	1	0	4
Richmond.....	3	6	7	-----	0	0	0	6
Roanoke.....	4	2	1	-----	1	0	0	1
West Virginia:								
Charleston.....	5	1	0	1	1	0	0	2
Huntington.....	2	-----	3	-----	0	0	0	0
Wheeling.....	11	1	0	-----	0	0	0	0
North Carolina:								
Raleigh.....	9	1	0	-----	0	23	0	2
Wilmington.....	4	1	2	-----	0	0	0	1
Winston-Salem.....	4	1	2	7	1	0	4	2
South Carolina:								
Charleston.....	1	0	0	38	0	0	0	4
Columbia.....	0	0	0	-----	0	0	0	7
Greenville.....	1	0	0	-----	0	0	0	0
Georgia:								
Atlanta.....	5	3	3	40	4	0	1	17
Brunswick.....	0	0	0	-----	0	0	2	0
Savannah.....	1	1	3	11	2	1	0	4
Florida:								
Miami.....	0	2	3	-----	0	0	0	1
Tampa.....	1	2	4	-----	0	0	0	1

## City reports for week ended January 9, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	1	0	0	0	0	0
Lexington.....	4		0	0	0	0	10	2
Tennessee:								
Memphis.....	8	5	15	0	0	0	0	8
Nashville.....	5	1	4	1	0	0	0	6
Alabama:								
Birmingham.....	4	5	3	4	4	1	0	8
Mobile.....	0	1	3	2	0	1	0	5
Montgomery.....	0	1	2			1	5	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	1	1	1			1	0	
Little Rock.....	0	1	3		0	0	7	3
Louisiana:								
New Orleans.....	0	13	16	6	3	0	0	9
Shreveport.....	2	2	1		0	10	1	2
Oklahoma:								
Tulsa.....	3	2	1			0	1	
Texas:								
Dallas.....	2	11	20	1	1	0	2	7
Fort Worth.....	3	5	7		0	0	0	3
Galveston.....	0	1	1		0	0	0	2
Houston.....	0	8	13		1	0	0	8
San Antonio.....	1	3	7		4	2	1	7
MOUNTAIN								
Montana:								
Billings.....	0	0	0		0	11	0	0
Great Falls.....	1	0	0	1	1	1	0	0
Helena.....	0	0	0		0	121	0	0
Missoula.....	1	0	0		0	0	0	1
Idaho:								
Boise.....	3	0	1		0	0	2	0
Colorado:								
Denver.....	18	7	11		10	2	21	24
Pueblo.....	22	1	0		0	0	0	3
New Mexico:								
Albuquerque.....	8	0	0		0	2	0	0
Arizona:								
Phoenix.....	1		3		0	0	0	2
Utah:								
Salt Lake City.....		3						
Nevada:								
Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	50	4	1			304	21	
Spokane.....	30	1	0			1	0	
Tacoma.....	15	2	0		0	2	4	5
Oregon:								
Portland.....	36	8	3	1	1	5	19	5
Salem.....	3	0	0	2	0	0	1	1
California:								
Los Angeles.....	84	36	28	72	4	1	11	39
Sacramento.....	25	3	0	1	1	90	1	19
San Francisco.....	110	14	5	13	5	14	0	9

## City reports for week ended January 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	3	2	0	0	0	0	0	0	0	3	22
New Hampshire:											
Concord.....	0	2	0	0	0	0	0	0	0	0	16
Nashua.....	0	0	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	0	0	0	0	0	0	0	0	4	3
Burlington.....	1	0	0	1	0	0	0	0	0	0	6
Massachusetts:											
Boston.....	87	122	0	0	0	15	1	0	0	47	237
Fall River.....	3	6	0	0	0	0	0	0	0	3	24
Springfield.....	9	5	0	0	0	1	0	0	0	3	39
Worcester.....	13	33	0	0	0	2	0	0	0	8	55
Rhode Island											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	14
Providence.....	14	25	0	0	0	7	0	0	0	12	90
Connecticut:											
Bridgeport.....	10	8	0	11	0	3	0	0	0	6	39
Hartford.....	8	18	0	0	0	2	0	1	0	22	42
New Haven.....	5	8	0	0	0	1	0	0	0	1	41
MIDDLE ATLANTIC											
New York											
Buffalo.....	25	62	0	0	0	7	1	1	1	29	158
New York.....	209	280	0	0	0	107	8	6	2	144	1,663
Rochester.....	11	61	0	0	0	0	0	0	0	7	64
Syracuse.....	13	13	0	0	0	0	0	0	0	70	45
New Jersey											
Camden.....	6	17	0	0	0	1	1	0	0	6	29
Newark.....	22	18	0	0	0	9	0	0	0	48	100
Trenton.....	5	6	0	0	0	2	0	0	0	2	45
Pennsylvania											
Philadelphia.....	93	147	0	0	0	24	2	3	1	190	541
Pittsburgh.....	37	42	0	0	0	8	0	1	0	27	211
Reading.....	4	1	0	0	0	0	0	0	0	3	18
Scranton.....	-----	19	-----	0	0	0	-----	0	0	11	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	21	40	1	0	0	9	0	0	0	8	144
Cleveland.....	43	70	0	0	0	10	2	0	0	164	214
Columbus.....	12	18	0	0	0	6	0	0	0	18	109
Toledo.....	14	14	1	0	0	3	0	1	0	93	65
Indiana:											
Fort Wayne.....	5	5	0	0	0	2	0	1	0	1	23
Indianapolis.....	11	8	5	0	0	6	0	0	0	16	-----
South Bend.....	3	1	0	0	0	2	0	0	0	0	17
Terre Haute.....	2	2	0	0	0	0	0	0	0	0	12
Illinois:											
Chicago.....	132	194	1	1	0	42	2	0	0	164	834
Springfield.....	3	-----	0	-----	-----	-----	0	-----	-----	-----	-----
Michigan:											
Detroit.....	103	92	1	0	0	25	2	2	0	115	-----
Flint.....	13	7	1	0	0	3	0	0	0	13	30
Grand Rapids.....	13	9	0	0	0	1	0	0	0	6	23
Wisconsin:											
Kenosha.....	2	3	0	0	0	0	0	0	0	2	7
Madison.....	4	2	0	0	-----	-----	0	0	-----	1	-----
Milwaukee.....	32	45	0	0	0	10	1	0	0	147	124
Racine.....	6	1	0	0	0	1	0	0	0	7	11
Superior.....	2	0	0	0	0	0	0	0	0	0	19

1 Nonresident.

## City reports for week ended January 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota											
Duluth.....	11	0	0	0	0	0	0	0	0	1	30
Minneapolis.....	46	37	0	0	0	4	0	0	0	17	93
St. Paul.....	28	17	1	0	0	1	0	0	0	7	52
Iowa:											
Davenport.....	2	9	1	0	-----	-----	0	0	-----	0	-----
Des Moines.....	8	7	1	0	-----	-----	0	0	-----	0	30
Sioux City.....	1	1	1	2	-----	-----	0	0	-----	5	1
Waterloo.....	1	0	0	0	-----	-----	0	0	-----	8	-----
Missouri:											
Kansas City.....	18	23	0	0	0	9	0	1	0	26	71
St. Joseph.....	1	2	0	0	0	1	0	0	0	0	18
St. Louis.....	43	27	1	0	0	13	0	0	0	51	214
North Dakota:											
Fargo.....	3	-----	0	-----	-----	-----	0	-----	-----	-----	-----
Grand Forks.....	1	3	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	0	0	0	0	-----	-----	0	0	-----	9	-----
Nebraska:											
Omaha.....	6	8	2	1	1	1	0	0	0	0	60
Kansas:											
Topeka.....	4	2	0	0	0	0	0	0	0	16	17
Wichita.....	3	4	0	0	0	0	0	0	0	1	36
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	5	8	0	0	0	2	0	0	0	4	33
Maryland:											
Baltimore.....	32	34	0	0	0	11	2	0	0	132	236
Cumberland.....	1	2	0	0	0	0	0	1	0	1	8
Frederick.....	0	2	0	0	0	0	0	0	0	0	4
Dist. of Columbia:											
Washington.....	25	23	0	0	0	5	1	1	0	17	133
Virginia:											
Lynchburg.....	1	3	0	0	0	1	0	0	0	2	13
Norfolk.....	2	6	0	0	0	4	0	0	0	2	-----
Richmond.....	8	15	0	0	0	6	0	0	0	1	68
Roanoke.....	2	4	0	0	0	0	0	0	0	0	21
West Virginia:											
Charleston.....	1	1	0	0	0	0	0	1	0	0	16
Huntington.....	-----	0	-----	0	0	0	-----	1	0	0	-----
Wheeling.....	2	1	0	0	0	0	0	1	0	8	18
North Carolina:											
Raleigh.....	1	3	0	0	0	0	0	0	0	0	13
Wilmington.....	0	0	0	0	0	1	0	0	0	11	7
Winston-Salem.....	3	2	1	0	0	2	0	0	0	4	14
South Carolina:											
Charleston.....	0	4	0	0	0	1	0	0	0	0	26
Columbia.....	1	4	0	0	0	1	0	0	0	3	40
Greenville.....	-----	0	0	0	0	0	-----	0	0	0	-----
Georgia:											
Atlanta.....	7	9	0	0	0	9	0	0	0	2	110
Brunswick.....	0	0	0	0	0	0	0	0	0	0	4
Savannah.....	1	1	0	0	0	1	0	0	0	4	31
Florida:											
Miami.....	1	1	0	0	0	0	0	0	0	0	32
Tampa.....	1	0	0	0	0	0	0	0	0	1	22
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	1	10	0	0	0	1	0	0	0	0	21
Lexington.....	-----	0	-----	0	0	0	-----	0	0	6	16
Tennessee:											
Memphis.....	8	10	1	4	0	1	1	0	0	15	78
Nashville.....	3	2	0	0	0	0	0	0	0	8	48
Alabama:											
Birmingham.....	5	10	1	0	0	3	1	0	0	1	81
Mobile.....	1	6	0	6	0	1	0	0	0	0	24
Montgomery.....	1	1	0	0	-----	-----	0	0	-----	1	-----

1 Nonresident.

14 nonresidents, inclusive.

## City reports for week ended January 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	1	0	0			0	0		1	
Little Rock.....	2	0	0	4	0	2	0	0	0	6	5
Louisiana:											
New Orleans.....	7	6	0	2	0	20	3	1	2	1	157
Shreveport.....	2	1	0	0	0	2	0	0	0	2	37
Oklahoma:											
Tulsa.....	2	2	0	0			0	0		5	
Texas:											
Dallas.....	7	7	0	0	0	1	0	0	0	11	66
Fort Worth.....	2	6	1	1	0	1	0	0	0	0	35
Galveston.....	0	0	0	0	0	0	0	0	0	0	15
Houston.....	4	6	3	2	0	2	0	1	0	2	70
San Antonio.....	1	0	0	0	0	6	0	2	0	0	59
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	11
Great Falls.....	4	1	0	0	0	1	0	0	0	0	5
Helena.....	0	0	0	0	0	0	0	0	0	2	2
Missoula.....	0	0	0	0	0	1	0	0	0	0	4
Idaho:											
Boise.....	0	0	0	1	0	0	0	0	0	0	6
Colorado:											
Denver.....	14	30	0	0	0	6	0	0	0	2	127
Pueblo.....	1	0	0	0	0	0	0	1	0	0	13
New Mexico:											
Albuquerque.....	1	0	0	0	0	4	0	0	0	0	16
Arizona:											
Phoenix.....	0	2	0	0	0	4	0	0	1	0	
Utah:											
Salt Lake City.....	3		0				1				
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle.....	10	7	2	1			1	0		14	
Spokane.....	7	7	3	0			0	1		0	
Tacoma.....	2	0	2	0	0	0	0	0	0	0	20
Oregon:											
Portland.....	6	5	6	2	0	2	0	1	0	3	
Salem.....	0	0		0	0	0		1	0	1	14
California:											
Los Angeles.....	37	46	3	6	0	29	1	0	0	21	351
Sacramento.....	2	2	1	0	0	2	0	0	0	0	44
San Francisco.....	17	12	2	3	0	12	1	1	0	4	216

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Deaths
<b>MIDDLE ATLANTIC</b>								
New York:								
New York City.....	13	5	1	0	0	0	2	1
Syracuse.....	0	0	0	0	0	0	0	0
New Jersey:								
Newark.....	0	2	1	0	0	0	0	0
Pennsylvania:								
Philadelphia.....	3	1	0	0	0	0	0	0
Pittsburgh.....	1	1	0	0	0	0	0	0
Scranton.....	0	0	1	0	0	0	0	0

1 Nonresident.



## City reports for week ended January 9, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis.		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est- imated expect- ancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	1	1	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	9	3	0	0	0	0	0	0	0
Illinois:									
Chicago.....	10	5	0	0	0	0	0	2	1
Michigan:									
Detroit.....	1	1	0	0	0	0	0	1	0
Flint.....	0	0	1	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
St. Paul.....	0	0	0	0	0	0	0	1	0
Iowa:									
Des Moines.....	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	2	1	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	0	0	1	0	0	0	0	0	0
District of Columbia:									
Washington.....	2	2	1	1	0	0	0	1	0
Virginia:									
Norfolk.....	1	0	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Savannah <sup>†</sup> .....	0	0	0	0	3	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	0	0	0	0	0	1	0	0	0
Nashville.....	0	1	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	1	1	0	0	0
Shreveport.....	0	0	0	0	0	2	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
Fort Worth.....	0	0	0	0	0	2	0	0	0
San Antonio.....	0	0	0	1	0	0	0	0	0
<b>MOUNTAIN</b>									
Montana:									
Billings.....	1	0	0	0	0	0	0	0	0
Colorado:									
Denver.....	1	1	0	0	0	0	0	0	0
New Mexico:									
Albuquerque.....	1	0	0	0	0	0	0	0	0
Arizona:									
Phoenix.....	1	0	0	0	0	0	-----	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	4	1	0	0	1	0	1	0	0
San Francisco.....	0	1	0	0	0	0	0	3	0

<sup>†</sup> Typhus fever: 1 case at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended January 9, 1932, compared with those for a like period ended January 10, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, December 6, 1931, to January 9, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding period of 1930-31<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931
98 cities.....	93	<sup>1</sup> 87	103	<sup>1</sup> 94	72	71	<sup>1</sup> 72	80	<sup>1</sup> 83	81
New England.....	70	128	84	143	65	75	<sup>1</sup> 85	116	79	79
Middle Atlantic.....	59	47	71	62	57	47	56	68	50	63
East North Central.....	86	120	101	116	69	102	<sup>1</sup> 65	91	<sup>1</sup> 76	97
West North Central.....	168	97	187	89	134	54	130	83	<sup>1</sup> 132	98
South Atlantic.....	118	122	118	108	99	86	71	62	114	85
East South Central.....	163	138	157	84	111	84	<sup>1</sup> 107	72	162	116
West South Central.....	247	<sup>1</sup> 132	189	<sup>1</sup> 202	115	143	129	136	204	142
Mountain.....	26	26	96	18	26	62	<sup>1</sup> 36	62	<sup>10</sup> 136	35
Pacific.....	61	55	82	83	41	40	<sup>11</sup> 64	55	65	61

## MEASLES CASE RATES

98 cities.....	118	<sup>1</sup> 162	128	<sup>1</sup> 104	126	181	<sup>1</sup> 192	281	<sup>1</sup> 295	350
New England.....	656	273	637	271	945	305	<sup>1</sup> 1,213	268	1,706	490
Middle Atlantic.....	80	85	79	87	66	70	93	101	146	178
East North Central.....	28	26	60	28	32	27	<sup>1</sup> 64	55	<sup>1</sup> 144	63
West North Central.....	46	1,077	25	1,416	50	1,277	38	1,894	<sup>1</sup> 65	2,156
South Atlantic.....	22	80	29	138	14	124	79	322	53	434
East South Central.....	17	299	52	275	17	323	<sup>1</sup> 31	921	17	861
West South Central.....	17	<sup>1</sup> 11	44	<sup>1</sup> 18	41	24	64	24	43	20
Mountain.....	809	150	740	167	339	223	<sup>1</sup> 533	317	<sup>10</sup> 1,530	226
Pacific.....	210	26	24	6	259	16	<sup>11</sup> 445	24	784	33

## SCARLET FEVER CASE RATES

98 cities.....	222	<sup>1</sup> 224	214	<sup>1</sup> 234	187	222	<sup>1</sup> 227	231	<sup>1</sup> 274	277
New England.....	397	289	438	251	389	353	<sup>1</sup> 541	327	549	438
Middle Atlantic.....	199	186	202	208	205	190	240	229	286	242
East North Central.....	281	315	264	306	227	285	<sup>1</sup> 234	261	<sup>1</sup> 296	363
West North Central.....	143	209	138	279	126	246	115	238	<sup>1</sup> 232	296
South Atlantic.....	176	260	201	208	107	178	221	262	227	276
East South Central.....	250	377	157	197	157	341	<sup>1</sup> 119	299	225	306
West South Central.....	142	<sup>1</sup> 84	101	<sup>1</sup> 73	41	59	108	105	69	68
Mountain.....	261	211	261	300	113	379	<sup>1</sup> 217	220	<sup>10</sup> 351	322
Pacific.....	153	71	94	83	61	85	<sup>11</sup> 109	73	141	72

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Shreveport, La., not included.

<sup>3</sup> Barre, Vt., Springfield, Ill., Covington, Ky., Boise, Idaho, and Spokane, Wash., not included.

<sup>4</sup> Springfield, Ill., Fargo, N. Dak., and Salt Lake City, Utah, not included.

<sup>5</sup> Barre, Vt., not included.

<sup>6</sup> Springfield, Ill., not included.

<sup>7</sup> Fargo, N. Dak., not included.

<sup>8</sup> Covington, Ky., not included.

<sup>9</sup> Boise, Idaho, not included.

<sup>10</sup> Salt Lake City, Utah, not included.

<sup>11</sup> Spokane, Wash., not included.

Summary of weekly reports from cities, December 6, 1931, to January 9, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931
98 cities.....	4	14	5	9	4	7	8	7	6	13
New England.....	7	0	55	0	14	0	12	0	28	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	2	3	4	6	4	2	7	5	1	15
West North Central.....	13	122	4	48	10	43	4	46	7	63
South Atlantic.....	0	0	0	0	0	0	0	0	0	2
East South Central.....	0	0	0	0	0	0	0	0	23	6
West South Central.....	17	7	3	15	7	17	0	17	26	37
Mountain.....	0	150	0	115	0	35	0	9	11	9
Pacific.....	10	6	2	10	8	20	11	10	19	18

## TYPHOID FEVER CASE RATES

	9	8	5	8	6	7	5	5	4	4
98 cities.....	9	8	5	8	6	7	5	5	4	4
New England.....	10	19	7	10	2	2	12	2	2	5
Middle Atlantic.....	6	6	5	3	4	3	3	4	5	2
East North Central.....	3	7	1	9	2	12	3	4	2	2
West North Central.....	6	6	0	8	4	6	2	2	2	0
South Atlantic.....	32	4	10	12	14	16	6	4	8	10
East South Central.....	17	18	23	36	12	18	38	48	0	12
West South Central.....	34	22	34	26	44	0	3	3	13	20
Mountain.....	0	0	0	9	0	0	0	18	11	17
Pacific.....	6	6	2	6	4	6	11	6	4	2

## INFLUENZA DEATH RATES

	8	9	8	10	9	11	13	16	18	24
91 cities.....	8	9	8	10	9	11	13	16	18	24
New England.....	5	5	5	2	7	2	2	7	10	5
Middle Atlantic.....	8	7	6	5	7	10	5	17	12	29
East North Central.....	3	5	6	10	5	7	10	7	14	12
West North Central.....	6	21	6	15	3	9	9	3	7	21
South Atlantic.....	12	24	12	20	12	24	18	20	35	28
East South Central.....	25	26	6	32	32	19	27	26	31	44
West South Central.....	7	11	17	23	24	32	45	93	30	76
Mountain.....	35	9	17	18	70	0	135	18	125	44
Pacific.....	14	7	14	10	7	17	14	10	23	22

## PNEUMONIA DEATH RATES

	98	106	106	111	101	126	121	164	144	187
91 cities.....	98	106	106	111	101	126	121	164	144	187
New England.....	67	119	111	116	94	119	92	160	165	113
Middle Atlantic.....	108	104	116	127	101	126	126	184	148	233
East North Central.....	66	86	63	69	77	94	84	103	104	110
West North Central.....	112	150	103	96	118	117	103	180	133	200
South Atlantic.....	140	134	142	138	132	174	174	230	196	267
East South Central.....	113	123	120	110	113	149	151	207	169	265
West South Central.....	104	162	142	135	131	189	152	199	128	238
Mountain.....	87	159	200	220	226	194	172	264	329	244
Pacific.....	130	60	122	127	89	135	175	135	167	134

<sup>1</sup> Shreveport, La., not included.

<sup>2</sup> Barre, Vt., Springfield, Ill., Covington, Ky., Boise, Idaho, and Spokane, Wash., not included.

<sup>3</sup> Springfield, Ill., Fargo, N. Dak., and Salt Lake City, Utah, not included.

<sup>4</sup> Barre, Vt., not included.

<sup>5</sup> Springfield, Ill., not included.

<sup>6</sup> Fargo, N. Dak., not included.

<sup>7</sup> Covington, Ky., not included.

<sup>8</sup> Boise, Idaho, not included.

<sup>9</sup> Salt Lake City, Utah, not included.

<sup>10</sup> Spokane, Wash., not included.

<sup>11</sup> Salt Lake City, Utah, not included.

## FOREIGN AND INSULAR

### SMALLPOX ON VESSEL

The steamship *Bellasco* arrived at Mobile, Ala., January 17, 1932, with one case of smallpox on board, and another suspicious case. The entire crew was vaccinated and the vessel was held in quarantine. The *Bellasco* came from Hull, England, by way of Habana, Cuba.

### CANADA

*Provinces—Communicable diseases—Week ended January 2, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended January 2, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island.....			1			
Nova Scotia <sup>1</sup> .....						1
New Brunswick.....						5
Quebec.....	2			2	2	7
Ontario.....		1			2	2
Manitoba.....						
Saskatchewan.....					1	
Alberta <sup>1</sup> .....						
British Columbia.....						1
Total.....	2	1	1	2	5	16

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended January 2, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended January 2, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Poliomyelitis.....	2
Chicken pox.....	59	Scarlet fever.....	89
Diphtheria.....	40	Smallpox.....	2
Erysipelas.....	3	Tuberculosis.....	46
Measles.....	161	Typhoid fever.....	5
Mumps.....	21	Whooping cough.....	33

## HONDURAS

*Smallpox.*—According to recent information, the epidemic of smallpox which began in June, 1931, in Honduras, had spread to many parts of the country, principally in the interior. The maritime ports continued free from the disease, with the exception of La Ceiba, where 14 cases were reported in September, and Trujillo, where 1 case was reported in August and 1 in September.

## JAMAICA

*Communicable diseases—Four weeks ended January 2, 1932.*—During the four weeks ended January 2, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica, outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox.....	8	7	Tuberculosis.....	46	68
Dysentery.....	1	9	Typhoid fever.....	16	45
Scarlet fever.....	1	1			

## MEXICO

*Tampico—Communicable diseases—December, 1931.*—During the month of December, 1931, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	3	—	Paratyphoid fever.....	—	1
Enteritis, various.....	—	58	Tuberculosis.....	—	26
Influenza.....	3	—	Whooping cough.....	12	1
Malaria.....	643	14			

## VIRGIN ISLANDS

*Communicable diseases—November, December, 1931.*—During the months of November and December, 1931, cases of certain communicable diseases were reported in the Virgin Islands as follows:

Disease	Cases		Disease	Cases	
	November	December		November	December
St. Thomas and St. John:			St. Croix—Continued.		
Chancreoid.....	—	1	Gonorrhea.....	—	2
Gonorrhea.....	1	2	Leprosy.....	—	1
Syphilis.....	1	4	Malaria.....	2	—
Saint Croix:			Syphilis.....	—	3
Chancreoid.....	—	1	Tuberculosis.....	—	1
Filariasis.....	—	1			



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place	June 23- July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended—									
					October, 1931		November, 1931		December, 1931		January, 1932			
					24	31	7	14	21	28	5	12	19	26
Indo-China (see also table below):														
Cochin-China—Rachgia	C	5	2	1			2							
Pnompenh	C	2	2	1										
Saigon and Cholon	C	14		1								P	1	1
Iraq:														
Abulkhasib	C	7		6										
Amara	C		66	5	4	2			3	3				
Amara Province	C	1	59	1	1	1			2	4			2	P
Basra	C	547	130	96	95	13	7	15						
Basra Province	C	287	293	157	38	30	9	1		3				
Dinwaniyah	C	5	53	42	7	18	10	1						
Dinwaniyah Province	C	2	30	19	1	4								
Iwaniyah	C				61	22	1							
Kut Province	C				44	10	6							
Maumtadq Province	C		225	200	17	17								
Nasiriyah	C		145	160	10	12	9	23	1	1				
Suqeshnuyk	C		88	83	4	6	6	17	3					
Suqeshnuyk	C		75	28	3	6	3	6	2	6				
Suqeshnuyk	C		2	2						7				
Japan: Taiwan—Kelung	C						2							
Persia:														
Abadan	C			1	1	3		3	1					
Ahwaz	C			12	84	69	16	21	3		37	1		
Ahwaz	D			7		69	21	8		7	31	1		





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## PLAGUE

[C indicates cases; D, deaths; P, present]

[illegible]



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	June 28- July 25, 1931	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended—													
					October, 1931				November, 1931				December, 1931				January, 1932	
					24	31	7	14	21	28	5	12	19	26	2	9	16	
Senegal (see table below).																		
Sierra Leone						1	4	1	3	1	1	1	1	1	1			
Spain: Hospitalet—Barcelona Province.						4	3	1	1	1	1	1	1	1	1			
Syria: Beirut.						5	2	1	1	1	1	1	1	1	1			
Tunisia: Tunis.						2	1	1	1	1	1	1	1	1	1			
Union of South Africa:						2	1	1	1	1	1	1	1	1	1			
Cape Province—Plague-infected rats.																		
Orange Free State.						1	P	P		P								

Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931
British East Africa (see also table above):													
Kenya.....	C												
Ecuador.....	154	454	235	14	64	15	Peru—Continued.						
Alamor Parish—Los Hoyos.....	C						Eten—Chancay.....	C			1		
Amaluza Parish—Cangochapa.....	C			1	3		Huancabamba—Ayacuba.....	D			1	7	
Calvas Canton—	C				2		Huancabamba—Chancay.....	D			1	6	
Caramanga.....	C			4	1		Huaura—Chancay.....	D			1	1	
Ovejera.....	C	1					Plague-infected rats	C					4
Celicia Canton—Choras.....	C				1	*	La Samana—Hualgayoc.....	C					1
Loja Canton—	C						Lima—Lima.....	D					1
Lepaz.....	C						Lima—Lima (haciendas).....	D					1
Naimuro.....	C			20			Paljan—Trujillo.....	D					1
Paterillo.....	C	1					Palulo—Hualgayoc.....	D					1
Tuburo.....	C			1	1		Patrovilca—Chancay.....	D				1	1
Palas Canton—San Antonio.....	C						Quispampa—Huancabamba.....	D					1
Indo-China.....	C	2	1	4	3		San Pedro—Pacasmayo.....	D					1
Madagascar (see also table above):	D	2	1	4	1		Supa—Chancay.....	D					1
Ambositra Province.....	D	15	1	1	8		Senegal	D					
Antsirabe Province.....	D	15	1	1	5		Baol.....	D	27	101	13	6	2
Antsirabe Province.....	D	12	13	22	19	17	Dakar.....	D	64	58	8	2	
Marinarivo Province.....	D	12	12	22	19	17	Diourbel.....	D	95	13	45	4	
Moramanga Province.....	D	8	8	20	14	18	Louga.....	D	34	2	1	1	10
Tananarive Province.....	D	1	1	3	12	13	Rufisque.....	D	2	2	1	1	12
Tananarive Province.....	D	1	1	3	11	11	Thies.....	D	19	26	12	7	16
Tananarive Province.....	D	10	5	45	63	120	Tivouane.....	D	2	10	8	5	7
Peru.....	D	9	5	44	63	117							
Barranca—Chancay.....	D	3	3	10	2								
Callao—Plague-infected rats	D	1	2	14	2								
Chepen—Pacasmayo.....	D		1										

\* Reports incomplete.





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued**

## TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

[illegible]



**CHOLERA, PLAGUE, TYPHUS FEVER, AND YELLOW FEVER—Continued**

[C indicates cases; D, deaths; P, present]

[illegible]





UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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PUBLIC HEALTH SERVICE

VOLUME 47    ::    ::    NUMBER 6 ✓

FEBRUARY 5 - - 1932

===== SPECIAL ARTICLE =====

Influenza Incidence by Age, Sex, and Color in the  
Epidemic of 1918-19



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

ASST. SURG. GEN. R. C. WILLIAMS, *Chief of Division*

THE PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

FEBRUARY 5, 1932

NO. 6

## THE INCIDENCE OF EPIDEMIC INFLUENZA, 1918-19\*

A FURTHER ANALYSIS ACCORDING TO AGE, SEX, AND COLOR OF THE RECORDS OF MORBIDITY AND MORTALITY OBTAINED IN SURVEYS OF 12 LOCALITIES

By ROLLO H. BRITTEN, *Senior Statistician, United States Public Health Service*

### CONTENTS

Introduction.	Mortality and case fatality.
Total epidemic morbidity (influenza incidence).	Summary.
Frequency of pneumonia as a complication.	Acknowledgments.

### Introduction

This report, one of a series of papers from this office on the epidemiology of influenza, is devoted to a discussion of the incidence of the disease in the different sex, age, and color groups of the population during the 1918-19 epidemic, as indicated by surveys made at that time by the United States Public Health Service in certain localities. Summaries of the results obtained in these surveys were published shortly after the surveys were finished;<sup>1</sup> but, as a further contribution to the epidemiological studies of the disease, it seems desirable to give a more detailed account of the results at this time.

The Public Health Service conducted special surveys in a number of widely scattered localities as soon as the 1918-19 epidemic in these

\* From the Office of Statistical Investigations, in cooperation with the Office of Industrial Hygiene and Sanitation, United States Public Health Service.

<sup>1</sup> Influenza in Maryland Preliminary Statistics of Certain Localities. By W. H. Frost and Edgar Sydenstricker. Pub. Health Rep., Mar. 14, 1919. Reprint No. 510.

Epidemiology of Influenza. By W. H. Frost and Edgar Sydenstricker. Pub. Health Rep., Aug. 15, 1919. Reprint No. 550. (Reprinted from J. A. M. A., vol. 73, No. 5, Aug. 2, 1919.)

Statistics of Influenza Morbidity, with Special Reference to Certain Factors in Case Incidence and Case Fatality. By W. H. Frost. Pub. Health Rep., Mar. 12, 1920. Reprint No. 586.

Variations in Case Fatality during the Influenza Epidemic of 1918. By Edgar Sydenstricker. Pub. Health Rep., Sept. 9, 1921. Reprint No. 692.

A list of epidemiological studies of influenza made by the Public Health Service will be found at the end of this article.

places appeared to have reached its close. The purpose was to determine for a population of known sex, age, and color composition the approximate incidence of the disease in sample areas of a number of widely scattered localities, and also to determine the relations between cases of influenza, cases of pneumonia, and deaths from these causes in so far as the number of observations would permit.

It was necessary to limit the surveys for the most part to localities in which the Public Health Service was at the time maintaining previously established organizations prepared to collect the requisite data reliably and efficiently; but in so far as practicable, the communities were chosen to represent the different geographical sections of the United States. Reference to Table 1 will show that, with the exception of the far West, this object was accomplished in a reasonably satisfactory manner. San Francisco was the only city west of San Antonio, Tex., and Des Moines, Iowa.

The survey included (a) 10 cities, varying in population from 22,500 to 680,000; (b) certain small towns of Maryland; and (c) one rural county of Maryland. The minor towns surveyed in Maryland are usually treated as a single statistical group in this report. In the case of Charles County, the entire population, rather than a sample of it, was made the basis of the survey. This particular survey was made by employees of the U. S. Bureau of the Census, funds having been transferred to that bureau by the Public Health Service for the purpose. The data were tabulated and analyzed by the Public Health Service. Although the canvass included the whole county, one of 12 enumeration districts was later dropped from the records, owing to the presence of a proving ground (Indianhead) which made that district unrepresentative of a general population.

In the case of Louisville, the canvass was made before the wave of the epidemic had run its full course; but in all the other localities the canvass is believed to have comprised practically the whole of the epidemic period. In Baltimore and San Francisco second surveys were made in January and February, respectively, to obtain a record of recrudescences which had taken place in the interval. The cases occurring during these recrudescences are included in the data here reported.

In the case of Spartanburg, S. C., some time after the completion of the canvass in the city itself, an additional survey was made of adjacent mill villages. These villages had a disproportionately large population of one selected class—mill workers—and for this reason the Spartanburg data are not altogether comparable with those collected in other localities.

The canvasses were made as soon as possible after the subsidence of the autumn (1918) wave of the epidemic in each locality. The following table will show the dates on which the surveys were begun and ended:

**TABLE 1.**—*Localities in which 1918-19 surveys were made, with dates of surveys, estimated total populations, and number of persons canvassed*

Locality	Dates of canvass		Total population (estimated) <sup>1</sup>	Population canvassed	
	Begun	Completed		Number of persons	Per cent of total population
New London, Conn. ....	Dec. 2, 1918	Dec. 18, 1918	25,000	7,933	31.7
Baltimore, Md. ....	Nov. 20, 1918	Jan. 31, 1919 <sup>2</sup>	680,000	33,361	4.9
Minor Maryland towns: <sup>3</sup>					
Cumberland .....	Dec. 1, 1918	Dec. 6, 1918	27,300	5,194	19.0
Frederick .....	Nov. 27, 1918	Nov. 30, 1918	11,340	2,311	20.4
Lonsconing .....	Dec. 4, 1918	Dec. 11, 1918	2,000	1,730	86.5
Salisbury .....	Dec. 10, 1918	Dec. 12, 1918	9,000	1,727	19.2
Downsville <sup>4</sup> .....	Dec. 7, 1918	do	850	718	84.4
Lingamore District (Frederick Co.) <sup>4</sup> ..	Nov. 29, 1918	do	1,000	688	68.8
Quantico <sup>4</sup> .....	Dec. 1, 1918	Dec. 10, 1918	2,000	114	5.7
Charles County, Md. ....	( <sup>5</sup> )	( <sup>5</sup> )	18,326	18,326	100.0
Spartanburg, S. C. ....	Dec. 5, 1918	Dec. 31, 1918	22,500	5,257	23.4
Augusta, Ga. ....	Feb. 1, 1919	Feb. 8, 1919	55,000	4,123	7.5
Macon, Ga. ....	Dec. 4, 1918	Dec. 14, 1918	50,000	7,905	15.8
Des Moines, Iowa. ....	Jan. 31, 1919	Feb. 8, 1919	115,000	5,857	5.1
Louisville, Ky. ....	Dec. 6, 1918	Dec. 27, 1918	245,000	12,002	4.9
Little Rock, Ark. ....	Dec. 2, 1918	Jan. 13, 1919	65,000	9,920	15.3
San Antonio, Tex. ....	Dec. 5, 1918	Dec. 22, 1918	150,000	12,534	8.4
San Francisco, Calif. ....	do	Feb. 21, 1919 <sup>6</sup>	475,000	18,682	3.9

<sup>1</sup> Estimated as of July 1, 1918; revised on the basis of other data.<sup>2</sup> The population included in survey made in November and December was recanvassed in January in order to record cases occurring during a recrudescence of the epidemic.<sup>3</sup> Total number of persons canvassed in minor Maryland towns was 12,482.<sup>4</sup> Rural area.<sup>5</sup> Census as of Mar. 12, 1910.<sup>6</sup> Actual count in February-March, 1919.<sup>7</sup> One enumeration district was later excluded from the study (see p. 304), leaving data for 16,147 canvassed persons.<sup>8</sup> The population included in survey made in November and December was recanvassed in February in order to record cases occurring during a recrudescence of the epidemic.

The population estimates contained in the third column of Table 1 require some comment. Since the epidemic occurred while this country was at war, a number of factors (principally the withdrawal of males for military service) tend to make population estimates more than usually unreliable in the present instance.<sup>2</sup> By the time of the 1920 census the unusual distribution had given way to a more normal one. An estimate based on the 1910 and the 1920 censuses will thus not afford a reliable indication of the population of individual localities in the fall of 1918. Indeed, a satisfactory estimate is impossible, however it be derived. But since the data here presented deal almost entirely with actually enumerated populations in sample areas, estimates of the total population are employed in only a few instances. The estimates adopted for use in the table are based on a number of factors, including an intercensal estimate of the population (calculated arithmetically), allowance having been made for the withdrawal of males for military service; population estimates based on the normal death rates from all causes, exclusive of respiratory infections; infor-

<sup>2</sup> This question has been given detailed consideration in the article, "Difficulties in Computing Civil Death Rates for 1918", by Edgar Sydenstricker and Mary L. King. Public Health Reports, Feb. 13, 1920, Reprint No. 583.

mation secured by Public Health Service officers located in the individual localities; and other available information.

Data were collected by intelligent inspectors working under specific instructions and careful supervision. In each locality these inspectors made a house-to-house canvass in 10 or more enumeration districts so situated geographically as to give, presumably, a fair sample of the general population of the city. Each district contained approximately the same number of families. Homes at which information was not available when the inspector called (owing to the absence of the adults, or for other reasons) were not counted. The effort was made to canvass in each city not less than 5,000 persons, in order to give a group sufficient for simple statistical analyses, and in cities of more than 100,000 population to increase this number so as to give not less than 5 per cent of the total population. These conditions were generally fulfilled.

Regarding each individual in the canvassed populations, the inspectors recorded the name, color, sex, and age at last birthday; whether or not sick since September 1, 1918, with "influenza," "pneumonia," or illness suspected to be influenza (classed as "doubtful"); date of onset, duration, and severity of such illnesses (whether "severe," "moderate," or "light"); and date of death, if death resulted. Regarding each household, the inspectors recorded the number of rooms occupied, and their impressions of the economic status of the family (whether "well-to-do," "moderate," "poor," or "very poor"). This point was recorded by the inspectors without instructions as to the possible definitions of each class.<sup>3</sup>

In making inquiry as to the type or nature of illness, the enumerators were instructed to ask which members of a family had "influenza," "flu," "grippe," "pneumonia," or "colds" since September 1, 1918. Persons who were said to have been only "feeling badly," or as having a "cold" were recorded as "doubtful" cases. If, however, the illness lasted not less than three days and was of such severity as to confine the patient to bed for the whole of one day, the case was classed as "influenza," unless otherwise diagnosed by the attending physician. Cases of illness, if definitely stated to be due to some cause other than "influenza," "pneumonia," or "colds," were not recorded. In view of the difficulties of diagnosis of influenza and the large number of mild cases indistinguishable from common colds, it was believed that the total morbidity from influenza during the epidemic period could be best represented by a figure which would include cases classified during the canvass as "influenza," "grippe," "pneumonia," and "doubtful." The widespread nature of the epidemic minimized the effect of minor

<sup>3</sup> A special study of the data secured in relation to economic conditions has recently been issued: *The Incidence of Influenza Among Persons of Different Economic Status during the Epidemic of 1918*. By Edgar Sydenstricker. Pub. Health Rep., Jan. 23, 1931, vol. 46, No. 4, (Reprint No. 1444.)

respiratory illnesses unassociated with influenza. The inclusion of "pneumonia" in the figures was, of course, logical, since during the epidemic only a comparatively few pneumonia cases occurred which were not sequelae of influenza.<sup>4</sup>

The sources of error involved in the method of survey outlined are fully appreciated. Although the canvasses were made as soon as possible after current morbidity and mortality reports indicated that the wave of the epidemic had subsided, certain important points had been forgotten by the informants. Especially was this true in regard to the dates involved.

Another source of error arose from the fact that the families' statements were accepted as to diagnosis for a disease the diagnosis of which is especially difficult and uncertain. No other course was open; and it is confidently believed that, owing to the peculiar and widespread nature of the epidemic, the data obtained were sufficiently reliable when used in the mass.

A third source of error lay in the employment of enumerators not specially trained for this work. However, they were carefully selected and the inquiries were purposely made sufficiently simple to permit even untrained persons to obtain the data with such detailed written instructions as were furnished, if under careful supervision.

When due allowance is made for the inevitable errors incident to the method employed, it is still believed that the surveys gave data which represented with reasonable accuracy the influenza morbidity in the localities surveyed. This view is corroborated by a comparison of the chronological incidence of influenza cases in the surveyed populations and the chronological reported mortality for the population as a whole. In the following table this comparison is made for those surveyed localities for which death rates for the total populations were available by weeks.

<sup>4</sup> That the inclusion of "doubtful" cases was justifiable for the epidemic period, for the purposes to which the data were to be put, is clearly indicated in the following table, from which it will be seen that, in Baltimore (the largest sample canvassed), cases classified as "influenza," "pneumonia," and "doubtful" show almost identical chronology. It is to be observed that the "doubtful" cases represent only 11 per cent of the total epidemic morbidity in Baltimore, for the surveys as a whole such cases were 7 per cent of the total—3,216 out of 42,920.

Week ended—	Cases reported by informant as—		Cases classified as "doubtful"	Week ended—	Cases reported by informant as—		Cases classified as "doubtful"
	"Influenza," "grippe"	"Pneumonia"			"Influenza," "grippe"	"Pneumonia"	
Sept. 7.....	28	6	7	Nov. 9.....	86	12	18
Sept. 14.....	52	2	8	Nov. 16.....	47	7	15
Sept. 21.....	126	10	14	Nov. 23.....	29	6	16
Sept. 28.....	271	32	41	Nov. 30.....	24	3	15
Oct. 5.....	1,363	185	165				
Oct. 12.....	1,608	137	170	Total.....	5,636	490	736
Oct. 19.....	1,206	73	156	Percentage of all cases.....	82.1	7.1	10.7
Oct. 26.....	524	44	60				
Nov. 2.....	275	23	51				

**TABLE 2.**—*Weekly death rates per 100,000 from influenza-pneumonia in total population and weekly influenza case rates per 1,000 in canvassed populations of six localities, by weeks during epidemic of 1918-19*<sup>1</sup>

Week ended—	Baltimore		Cumberland		Augusta		Louisville		Little Rock		San Francisco	
	Death rate in total population	Case rate in canvassed population	Death rate in total population	Case rate in canvassed population	Death rate in total population	Case rate in canvassed population	Death rate in total population	Case rate in canvassed population	Death rate in total population	Case rate in canvassed population	Death rate in total population	Case rate in canvassed population
<b>1918</b>												
Sept. 7.....	0	1.2	0	2.1	0	1.5	0	1.7	1.5	1.0	1.3	1.5
Sept. 14.....	1.0	1.9	0	3.1	0	.7	1.2	1.1	0	1.8	1.3	2.5
Sept. 21.....	7	4.5	0	7.7	0	1.7	3.7	1.5	0	4.9	2.7	8.5
Sept. 28.....	2.8	10.3	3.7	33.5	1.8	2.9	1.6	1.4	0	8.6	3.2	3.3
Oct. 5.....	17.2	49.8	33.0	96.6	3.3	11.2	5.7	22.9	18.5	87.3	2.9	7.2
Oct. 12.....	82.8	57.3	307.7	123.2	16.4	14.6	37.6	8.6	133.8	95.8	6.3	13.2
Oct. 19.....	104.6	43.0	402.9	71.4	30.9	14.1	73.5	13.9	146.2	52.1	27.4	27.5
Oct. 26.....	157.8	18.8	172.2	25.8	61.8	7.3	73.9	5.8	93.8	27.9	116.2	28.8
Nov. 2.....	54.4	10.5	76.9	12.7	54.5	17.0	28.2	10.5	24.6	20.3	155.4	16.2
Nov. 9.....	21.6	3.5	40.3	6.7	32.7	11.6	23.7	5.3	9.2	8.9	87.2	9.5
Nov. 16.....	7.5	2.1	22.0	4.8	34.5	21.6	15.9	9.6	7.7	9.8	41.7	9.4
Nov. 23.....	5.3	1.5	14.6	4.0	43.6	15.0	14.3	7.0	4.6	7.5	18.9	5.1
Nov. 30.....	5.9	1.3	7.3	2.1	34.5	13.1	25.3	14.3	13.8	7.9	11.8	4.3
Dec. 7.....	8.5	1.1	3.7	1.2	23.6	11.4	22.4	18.8	12.3	8.1	10.5	9.0
Dec. 14.....	10.0	1.0	7.3	-----	16.4	8.2	37.1	6.6	12.3	3.9	14.9	8.2
Dec. 21.....	10.9	1.4	7.3	-----	12.7	15.5	22.4	1.5	9.2	3.1	28.8	6.8
Dec. 28.....	8.4	2.5	7.3	-----	10.9	20.1	15.1	-----	10.8	2.4	37.5	12.4
<b>1919</b>												
Jan. 4.....	7.1	2.5	3.7	-----	20.1	26.7	9.0	-----	10.8	-----	40.8	9.6
Jan. 11.....	11.0	4.0	-----	-----	63.6	44.9	8.2	-----	13.8	-----	61.1	7.1
Jan. 18.....	12.2	3.3	-----	-----	70.9	33.2	8.6	-----	36.9	-----	65.3	6.2
Jan. 25.....	22.1	1.3	-----	-----	65.5	16.0	12.2	-----	21.5	-----	31.4	1.3
Feb. 1.....	20.3	.2	-----	-----	25.5	5.1	8.2	-----	20.0	-----	12.4	-----

<sup>1</sup> Deaths classified according to date of death; cases classified according to date of onset.

The mortality rates are seen to follow the case incidence rates with considerable exactness, when one takes into account the necessary lag due to the difference between date of onset of the disease and death from it. So far as these few examples justify any conclusion it would appear that, for comparison between communities, with respect to chronology, mortality statistics give results quite similar to those derived from morbidity statistics. In the section on case fatality, however, it will be shown that entirely misleading results as to actual incidence of the disease would be obtained from judging by mortality alone.

#### Total Epidemic Morbidity (Influenza Incidence)

##### GENERAL ASPECTS

The observations made during the surveys relate to 146,203 persons, 42,920 cases, and 730 deaths. In view of the fact that the record of the morbidity from influenza practically disappears between epidemics and is extremely incomplete during epidemics, special significance must attach to the results of such a canvass. Although the data can not in themselves give an accurate picture of the incidence of the disease or of its case fatality in diverse parts of the country, they do indicate the incidence and fatality for the samples surveyed

and thus—in view of the correlation chronologically with the more general records noted in the introduction—for the particular cities in which the surveys were made. Accordingly, they serve as a check upon the precision of other morbidity data, and indicate in a general way certain highly important relations between morbidity and mortality.

The general incidence of influenza ("total epidemic morbidity") in the areas canvassed will be the first point to be taken up. In a later section of the report it will be shown that this incidence was not greatly different in the white and colored population. Because of this fact, and because of the small proportion of colored in most of the localities, no considerable error will be introduced into the following discussion by combining the white and colored rates.

TABLE 3.—*Incidence of influenza in canvassed populations of each surveyed locality during the epidemic of 1918-19*

Locality	Rate per 1,000	Number of cases	Number of persons	Locality	Rate per 1,000	Number of cases	Number of persons
All localities.....	294	42,920	146,203	Baltimore, Md. ....	246	8,199	33,361
San Antonio, Tex. ....	535	6,701	12,534	Des Moines, Iowa. ....	231	1,353	5,857
Minor Maryland towns....	405	5,060	12,482	San Francisco, Calif. ....	215	4,021	18,082
Charles County, Md. ....	405	6,546	16,147	Spartanburg, S. C. ....	214	1,126	5,257
Little Rock, Ark. ....	359	3,565	9,920	Macon, Ga. ....	213	1,681	7,905
Augusta, Ga. ....	341	1,405	4,123	New London, Conn. ....	185	1,466	7,933
				Louisville, Ky. <sup>1</sup> .....	150	1,797	12,002

<sup>1</sup> Survey made before epidemic had ended.

The rate for all localities is 294 per thousand persons. In other words, one out of every three or four persons in the canvassed populations reported that they had influenza during the autumn wave of the epidemic and the recurrence. Other studies made by the same method in various parts of the country give substantially the same results, and a tabulation of these studies by Jordan is of interest at this point.

TABLE 4.—*Incidence of influenza (autumn wave, 1918) in canvassed populations of various United States communities*<sup>1</sup>

Locality	Rate per 1,000	Number of cases	Number of persons canvassed	Locality	Rate per 1,000	Number of cases	Number of persons canvassed
Oswego, N. Y. <sup>2</sup> .....	470	6,094	12,952	Watertown, N. Y. <sup>2</sup> .....	282	5,765	20,473
Mifflville, N. J. <sup>3</sup> .....	408	4,749	11,686	Gloucester, N. J. <sup>3</sup> .....	245	2,930	11,969
Bridgeton, N. J. <sup>3</sup> .....	289	3,845	13,319	New Britain, Conn. <sup>4</sup> .....	234	645	2,757

<sup>1</sup> From *Epidemic Influenza*, by E. O. Jordan, p. 180.

<sup>2</sup> Some Statistics of Influenza in Oswego and Watertown in 1918. Official Bull. N. Y. State Department of Health, 4:53.

<sup>3</sup> Report of Bureau of Local Health Administration. State Department of Health of New Jersey, 42:28.

<sup>4</sup> Statistics of the 1918 epidemic of influenza in Connecticut. Winslow, C.-E. A., and Rogers, J. F. *Journ. Infect. Dis.*, 36:185.

It is of interest to contrast these results with those for the Army, remembering that in the latter case the population is concentrated at



those ages when the incidence was particularly high. The rates for four months of 1918 (September–December), corresponding approximately to the period covered by the Public Health Service surveys, are given in Table 5. The rates are for hospital admissions for influenza, bronchitis, broncho-pneumonia, and lobar pneumonia combined, and are exclusive of sickness occurring among the troops in Europe.

TABLE 5.—*Incidence of total respiratory diseases<sup>1</sup> in Army in the United States, (admissions) September to December, inclusive, 1918<sup>2</sup>*

Rate per 1,000.....	310.4
Cases.....	424,074
Mean strength.....	1,366,016

<sup>1</sup> Influenza, bronchitis, broncho-pneumonia, and lobar pneumonia

<sup>2</sup> Compiled from data given in the Medical Department of the United States Army in the World War. Vol. IX. Communicable and Other Diseases. Prepared by Lieut. Col. Joseph F. Siler. Chapter 2 Inflammatory Diseases of the Respiratory Tract, by Maj. Milton W. Hall.

With this picture before us, we are able to establish in a broad way what the incidence of influenza was during the 1918 epidemic, and the results secured in the surveys by the Public Health Service seem to give a rather representative mean.

Detailed house-to-house surveys in England, comparable to the canvass by the Public Health Service, were made in a number of towns for the summer and autumn waves of 1918, giving considerably lower rates than those indicated for this country. Table 6 summarizes these results (also from Jordan).

TABLE 6.—*Comparison of influenza incidence rates per 1,000 in English towns 1918<sup>1</sup>*

Locality	Summer	Autumn	Total	Persons
Manchester <sup>2</sup> .....	149	103	252	4,660
Leicester <sup>3</sup> .....	63	146	209	4,619
Cambridge <sup>4</sup> .....	36	165	201	—
Warrington <sup>5</sup> .....	75	82	157	1,626
Newcastle-upon-Tyne <sup>6</sup> .....	62	47	109	4,461

<sup>1</sup> From Epidemic Influenza, by E. O. Jordan, p. 194

<sup>2</sup> Analysis of the results of a block census undertaken in Manchester in December, 1918–1920. Ministry of Health. Report on the Pandemic of Influenza, 1918–19. London. P. 455. By T. Carnsath.

<sup>3</sup> Report on an inquiry into the recent epidemic of influenza in the county borough of Leicester. 1920. Ministry of Health. Report on the Pandemic of Influenza, 1918–19. London. P. 445. By M. B. Arnold.

<sup>4</sup> Report on incidence of influenza in the University and Borough of Cambridge, and in the Friends School, Saffron Walden. 1920. Ministry of Health. Report on the Pandemic of Influenza, 1918–19. London. P. 368. By S. M. Cooperman.

<sup>5</sup> Report on an investigation of the incidence and effects of influenza among the population of Warrington (Lancs.). 1920. Ministry of Health. Report on the Pandemic of Influenza, 1918–19. London. P. 539. By G. W. N. Joseph.

<sup>6</sup> Analysis of an influenza census at Newcastle-upon-Tyne. 1920. Ministry of Health. Report on the Pandemic of Influenza, 1918–19. London. P. 556. By S. J. Clegg.

Returning again to the canvass made by the Public Health Service, it will be noted that the highest rate was in San Antonio, where one out of every two persons reported having the disease. The range of variation in the rates is considerable, the rate in San Antonio being nearly three times that in New London. The canvassed populations are so large that only a relatively small part of this fluctuation can be

explained as being due to chance.<sup>5</sup> However, in several widely separated localities the incidence rate varied only within narrow limits.

A cursory examination of the rates in the different localities will show that no consistent relation is manifested between the rates and the geographic position of the localities. If the New England and Maryland localities are grouped together and contrasted with the central and southern localities, the rates in the two groups will be found to be practically identical, namely, 304 and 306, respectively.

#### AGE

A marked selective effect on the incidence of influenza was exerted by age during the epidemic of 1918-19. This observation, which is common to nearly all reports on the epidemic, is corroborated by the data secured in the surveys. What they show most clearly is a very heavy incidence in the younger ages and a definite contrast with the curve of mortality.

The influenza morbidity rates for each 5-year age group for all surveyed localities are given in Table 7.

TABLE 7.—Incidence of influenza among canvassed persons in each age group in all surveyed localities during the epidemic of 1918-19

Age group	Rate per 1,000	Number of cases	Number of persons
All ages	294	142,920	146,203
Under 1	297	586	2,838
1-4	317	4,076	11,933
Under 5	312	4,602	14,771
5-9	391	5,755	14,725
10-14	381	5,104	14,182
15-19	345	4,448	12,897
20-24	323	3,967	12,287
25-29	317	4,127	12,234
30-34	326	3,805	11,668
35-39	296	3,276	11,074
40-44	246	2,219	9,415
45-49	207	1,688	8,157
50-54	175	1,162	6,628
55-59	162	698	4,323
60-64	143	547	3,756
65-69	135	332	2,456
70-74	111	189	1,703
75 and over	88	145	1,650

<sup>1</sup> Includes 566 of unknown age.

<sup>2</sup> Includes 1,277 of unknown age.

It will be noted that the incidence was highest in the age group 5 to 9, fell off progressively in the age groups from 10 to 24, rose to

<sup>5</sup> Even in the case of New London, which has one of the smallest surveyed populations, the probable error of the rate is less than 7 per 1,000 persons. This calculation is based on the formula

$$0.6745 \sqrt{\frac{pq}{n}} \text{ or } \sqrt{\frac{(\text{rate})(1000 - \text{rate})}{n}}$$

where  $p$  is the chance that an individual will have a case,  $q$  the chance that he will not, and  $n$  the size of the canvassed population. The probable error is applicable because there were relatively few instances where one person reported having more than one case.

a minor second mode in the age group 25 to 29, and then declined progressively in successive age groups. Among old people the incidence appeared to be not more than one-third of that among the young.

Through the courtesy of the health officers of the States of Kansas and Maryland, reports of cases of influenza in these States were available for statistical analysis. Without going into the results of these studies in any detail, a comparison by age is of interest for corroborative purposes. There was, of course, no expectation that any great proportion of the cases occurring would be reported to the health departments of the States, but it was felt that the relative incidence by age might not be greatly affected by this limitation. In order to permit a comparison between the surveyed data and the data for the two States, the rates have been reduced to an index basis by dividing by the rate for all ages. Thus the three curves are put on a relative basis, and the actual height becomes of no significance.

TABLE 8.—*Relative incidence of influenza by age in surveyed localities, in Kansas, and in Maryland during epidemic of 1918-19 (rate for each age group divided by rate for all ages)*

Age group	Surveyed localities	Kansas	Maryland	Age group	Surveyed localities	Kansas	Maryland
Under 5.....	1.04	0.73	0.73	45-49.....	0.69	0.59	0.58
5-9.....	1.30	1.28	1.29	50-54.....	.58	.34	.40
10-14.....	1.27	1.34	1.36	55-59.....	.54		.31
15-19.....	1.15	1.34	1.47	60-64.....	.48		.24
20-24.....	1.08	1.30	1.40	65-69.....	.45	.19	.20
25-29.....	1.12	1.36	1.29	70-74.....	.37		
30-34.....	1.09	1.34	1.22	75 and over.....	.29		
35-39.....	.99	1.09	.96	All ages.....	1.00	1.00	1.00
40-44.....	.79	.88	.71				

The results are represented graphically in Figure 1. In general, the curves for Kansas and Maryland correspond to the curve for the survey, although the former show a tendency to fall off more rapidly with age. This may be due to a greater tendency not to report sickness among old people to the health authorities. At all events, it is the similarity of the three curves, rather than any differences, which is most striking.

The age curves in each of the surveyed localities may next be considered. These curves are given, in 5-year age groups, in Figure 2 and Table 9. For the graph, as in the preceding case, the ratios of the rate in each age group to that for all ages are used so that the age incidence in the different localities may be readily compared.

TABLE 9.—Incidence of influenza by age in each locality during epidemic of 1918-19

[Rate per 1,000]

Age group	New Lon- don	Balti- more	Minor Mary- land towns	Charles County, Md.	Spar- tan- burg	Augus- ta	Ma- con	Des Moines	Louis- ville	Little Rock	San An- to- nio	San Fran- cisco
Under 5.....	180	283	414	380	252	388	247	274	238	366	488	209
5-9.....	230	366	493	448	253	480	318	350	268	463	609	281
10-14.....	224	317	512	486	238	416	264	233	211	460	625	290
15-19.....	177	289	493	508	232	325	219	220	142	384	588	235
20-24.....	207	275	476	493	250	326	207	240	169	335	590	236
25-29.....	236	314	485	465	221	412	225	261	143	392	598	262
30-34.....	210	295	488	441	217	388	202	249	188	378	590	238
35-39.....	221	229	421	407	214	308	238	235	155	386	527	225
40-44.....	173	185	321	349	168	242	196	219	113	262	464	185
45-49.....	169	158	300	277	158	268	142	162	93	278	410	157
50-54.....	121	135	206	255	152	281	132	138	84	213	379	121
55-59.....	72	131	211	229	124	248	110	161	64	199	330	97
60-64.....	105	124	183	211	130	217	89	140	66	222	234	80
65-69.....	103	112	201	181	75	283	63	125	83	136	294	72
70-74.....	74	79	145	147	142	214	67	139	51	211	247	78
75 and over.....	20	56	109	110	150	275	45	36	49	236	230	33

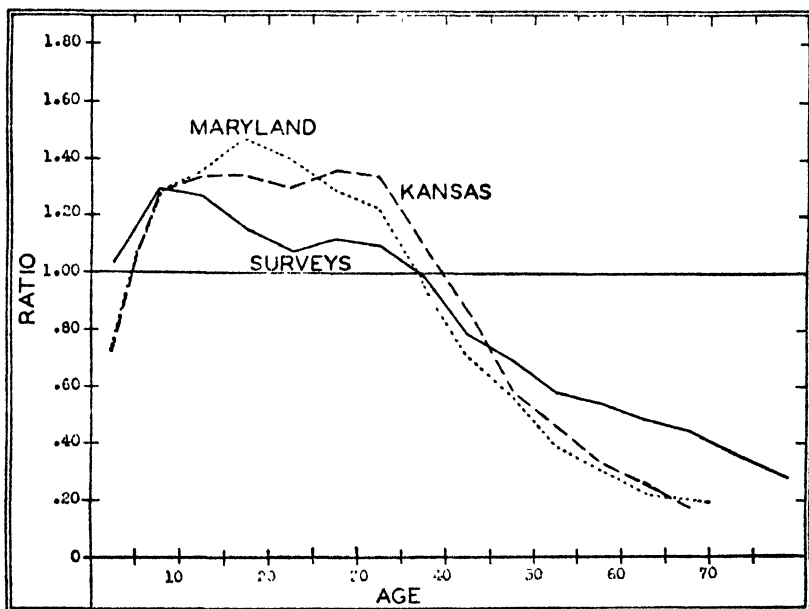


FIGURE 1. Relative incidence of influenza by age in surveyed localities, in Kansas, and in Maryland, during 1918-19 epidemic (ratio of rate in each age group to that in all ages)

Although minor differences are noted in the incidence in various age groups, the essential similarity in the different localities—if we neglect the actual level of the rates already considered—is much more striking than these slight differences, indicating quite conclusively that the selective incidence in relation to age was a marked characteristic of this epidemic in each locality. The peak in the

younger ages, with a gradual decline in the rates after age 30 or 35, is found in every locality.

Perhaps of greatest interest is the suggestion that the double peak indicated in the data for all surveyed localities and in the reported morbidity for Kansas is really significant. The only curve which

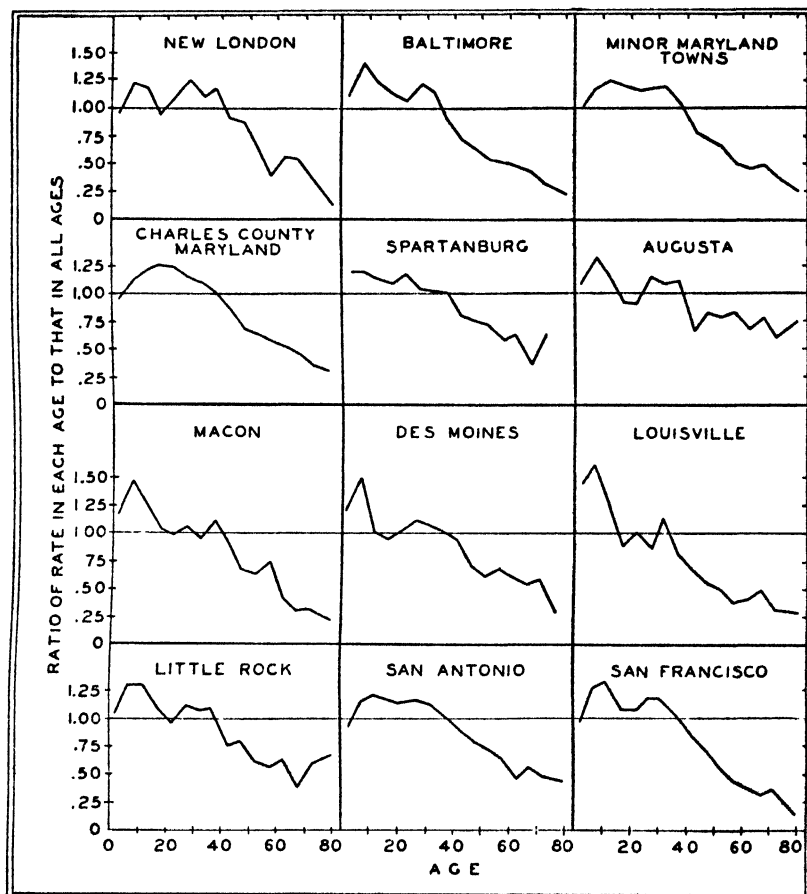


FIGURE 2.—Ratio of influenza case incidence in each age group to that in all ages in a canvassed population of each surveyed locality

does not give a suggestion of the two peaks is that for a rural area (Charles County). The first peak usually occurs in the age group 5 to 9 and the second peak in the age group 25 to 29. This bimodal tendency is analyzed in Table 10, giving the age group in which the two modes occur in each locality.

**TABLE 10.—Age groups when first and second modes occur in each surveyed locality during epidemic of 1918-19**

Locality	Age group when—	
	First mode occurs	Second mode occurs
Spartanburg .....	10-9	20-24
Baltimore .....	5-9	25-29
New London .....	5-9	25-29
Augusta .....	5-9	25-29
Des Moines .....	5-9	25-29
Little Rock .....	5-9	25-29
Louisville .....	5-9	30-34
Macon .....	5-9	35-39
San Antonio .....	10-14	25-29
San Francisco .....	10-14	25-29
Minor Maryland towns ..	10-14	30-34

<sup>1</sup> Same rate for 0-4 and for 5-9

In practically every case the second mode is quite definite, but it should be pointed out that in only one locality (New London) is the second mode higher than the first.

Reference may be made to the fact that W. T. Vaughan, in a house-to-house survey of 10,000 persons in Boston, also found two peaks of age incidence.

Question arose as to the advisability of adjustment of the rates for influenza in the various surveyed localities to a standard age or age and sex distribution of the population. Such adjustments were worked out, but found to be too slight in their effect to warrant their use in this paper, except for certain comparisons between the sexes.<sup>6</sup>

#### INCIDENCE OF INFLUENZA IN THE TWO SEXES

The morbidity rate of influenza as obtained in these canvasses was slightly higher for women than for men, the rate for all localities being 307 and 294, respectively, after adjustment to a standard age

<sup>6</sup> To bring out the rather slight effect of adjustment for age and sex, the following table is reproduced. The rates for the different localities differ so much from those used previously, because in this case it was necessary to base the rate on persons of known ages.

Locality	Actual rate per 1,000 known ages	Rate per 1,000 adjusted to standard population (all surveyed localities)			
		By age		By age and sex	
		Rate	Ratio to actual	Rate	Ratio to actual
All localities .....	298	301	1.01	300	1.01
San Antonio, Tex. ....	536	525	.98	522	.97
Minor Maryland towns ..	408	418	1.02	417	1.02
Charles County, Md. ....	406	405	1.00	405	1.00
Little Rock, Ark. ....	360	356	.99	354	.98
Augusta, Ga. ....	359	362	1.01	359	1.00
Baltimore, Md. ....	253	260	1.03	258	1.02
Des Moines, Iowa .....	232	235	1.01	233	1.00
Spartanburg, S. C. ....	217	214	.99	212	.98
San Francisco, Calif. ....	216	219	1.01	218	1.01
Macon, Ga. ....	213	216	1.01	212	1.00
New London, Conn. ....	187	189	1.01	183	1.01
Louisville, Ky. ....	158	165	1.04	165	1.04

distribution. The rates for women were higher in nearly every locality. The differences are brought out in Table 11. Adjustment seemed advisable, because of the possible effect of the withdrawal of males for military duty. As a matter of fact, this adjustment made little difference in the ratio between the two sexes, the unadjusted rates being 304 and 292 for women and for men for all known ages and 299 and 288 for all ages.

TABLE 11.—*Incidence of influenza by sex in each surveyed locality (adjusted to standard age distribution) during epidemic of 1918-19*

Locality	Rate per 1,000		Ratio of female rate to male	Locality	Rate per 1,000		Ratio of female rate to male
	Male	Female			Male	Female	
All localities .....	294	307	1.04	San Francisco.....	213	222	1.04
Macon.....	194	229	1.18	San Antonio.....	514	530	1.03
Minor Maryland towns .....	406	459	1.13	Augusta.....	357	364	1.02
Spartanburg.....	200	220	1.10	Charles County, Md.....	403	406	1.01
Baltimore.....	248	270	1.09	Des Moines.....	229	231	1.01
New London.....	185	192	1.04	Louisville.....	166	164	.99
				Little Rock.....	352	345	.98

When it is realized that in a large proportion of families the information was secured from the wife, it seems possible that this slight excess for women might be due to the fact that they were able to remember their own cases somewhat better than the cases of other members of the family. A tendency of this character has been noted in other studies where the information was secured in this manner.<sup>7</sup> Thus the only conclusion which is really justified is that there was no *marked* difference in the rates of the two sexes.

In Table 12 and Figure 3 comparison is made by sex for the different ages.

TABLE 12.—*Incidence of influenza among canvassed males and females in each age group, in all surveyed localities during epidemic of 1918-19*

Age group	Rate per 1,000		Number of cases		Number of persons	
	Male	Female	Male	Female	Male	Female
All ages.....	288	299	19,742	23,169	68,684	77,495
Under 1.....	214	199	301	284	1,407	1,427
1-4.....	348	325	2,081	1,933	5,984	5,945
Under 5.....	322	301	2,382	2,217	7,391	7,372
5-9.....	388	394	2,845	2,910	7,342	7,382
10-14.....	379	383	2,649	2,755	6,994	7,187
15-19.....	332	356	1,985	2,401	5,986	6,909
20-24.....	288	343	1,267	2,690	4,405	7,881
25-29.....	328	344	1,624	2,503	4,953	7,281
30-34.....	320	331	1,723	2,082	5,385	6,283
35-39.....	295	296	1,638	1,638	5,640	5,527
40-44.....	242	230	1,112	1,107	4,592	4,823
45-49.....	200	215	850	838	4,250	3,907
50-54.....	167	184	655	607	3,319	3,308
55-59.....	157	166	334	393	2,180	2,192
60-64.....	128	157	237	300	1,848	1,908
65-69.....	132	138	154	178	1,170	1,286
70-74.....	114	108	85	104	744	959
75 and over.....	83	92	58	87	702	948

<sup>7</sup> The Illness Rate Among Males and Females. By E. Sydenstricker. Pub. Health Rep., vol. 42, No. 30, July 29, 1927. (Reprint 1172.)

Except for the youngest ages, there is a tendency for the female rates to be higher, but, as just pointed out, the difference is slight. The ratios of female rates to male rates for broad age groups are as follows: Under 15 years, 0.99; 15 to 44, 1.07; 45 to 59, 1.07; and 60 and over, 1.09. The age curves are practically identical in the two sexes, the only difference between the two being the greater depression in the male curve between the two modes. In fact, the female curve shows only a bare suggestion of the second mode

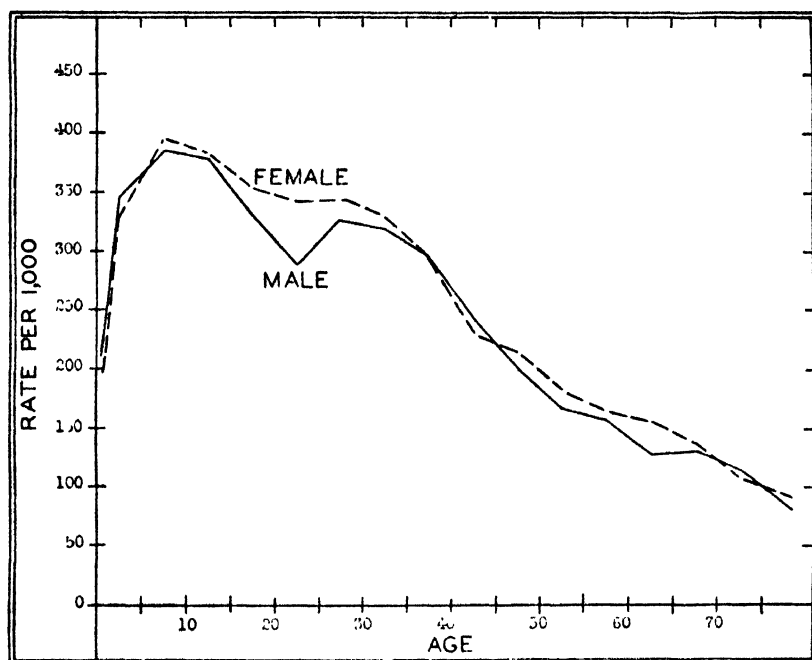


FIGURE 3.-Incidence of influenza among canvassed males and females in each age group (all surveyed localities)

#### INCIDENCE IN COLORED POPULATION

Since a number of the cities had a considerable colored population, it is of interest to determine whether a larger percentage of white or colored were attacked. We are faced immediately with the difficulty of getting as complete information from the colored as from the white in a canvass of this character; thus any results must be discounted. No rates have been used for all the surveyed localities, because of the varying proportion of colored persons in the different localities. The rates in the eight places where there was a sufficient number of colored to give somewhat reliable results are given in Table 13, adjustment having been made to a standard age and sex distribution.



TABLE 13.—*Incidence of influenza in white and colored canvassed populations during the epidemic of 1918-19 (adjusted to a standard age and sex distribution)*

Locality	Rate per 1,000		Ratio of colored to white	Number of cases		Number of persons	
	White	Colored		White	Colored	White	Colored
Louisville.....	179	49	0.27	1,739	58	10,534	1,465
Baltimore.....	278	116	.42	7,690	481	29,085	4,195
Augusta.....	456	212	.47	1,044	361	2,434	1,689
Macon.....	220	137	.62	1,337	341	5,971	1,930
Spartanburg.....	224	173	.77	1,033	84	4,652	681
Minor Maryland towns.....	419	385	.92	4,794	249	11,782	643
Little Rock.....	360	338	.94	2,657	908	7,262	2,654
Charles County, Md.....	<sup>1</sup> 379	<sup>1</sup> 431	1.14	3,028	3,518	7,992	8,155

<sup>1</sup> Rates for Charles County unadjusted; adjustment made only a slight difference in the ratios.

With the exception of Charles County, Md. (see p. 304 for information as to method of survey in this locality), the rates are consistently lower for the colored populations. In Louisville, Baltimore, and Augusta the rate is at least twice as great in the white as in the colored population. The fact that the colored population live generally under conditions presumably more favorable to the spread of contact infections would lead one to expect a higher rate of influenza among them. How much of the difference is to be ascribed to more complete reporting among the white populations is quite impossible to determine. Some confirmation of this difference between the incidence of influenza in white and colored is given by the rates for the Army while in the United States. The period covered in the table is September-December, 1918.

TABLE 14.—*Incidence of total respiratory<sup>1</sup> disease by color in Army in the United States, September-December, inclusive, 1918<sup>2</sup>*

	White	Colored
Rate per 1,000.....	316	269
Number of cases.....	383,498	40,576
"Strength".....	1,215,447	150,569

<sup>1</sup> Influenza, bronchitis, broncho-pneumonia, lobar pneumonia.

<sup>2</sup> Compiled from data given in the Medical Department of the United States Army in the World War. Vol. IX. Communicable and Other Diseases. Prepared by Lieut. Col. Joseph F. Siler. Chap. 2: Inflammatory Diseases of the Respiratory Tract, by Maj. Milton W. Hall.

One further table is presented giving the incidence of influenza by color in the two sexes. The tendency for higher rates in the white population is evidently present in both sexes.

**TABLE 15.—Incidence of influenza by sex and color in certain canvassed localities during epidemic of 1918–19**

Locality	Rate per 1,000			
	Male		Female	
	White	Colored	White	Colored
Louisville.....	169	43	162	37
Baltimore.....	255	98	272	129
Augusta.....	427	107	430	225
Spartanburg.....	207	135	235	152
Macon.....	198	171	246	180
Little Rock.....	377	308	355	371
Minor Maryland towns.....	397	330	415	432
Charles County, Md.....	383	419	374	445

**The Frequency of Pneumonia as a Complication**

## GENERAL ASPECTS

The 1918–19 epidemic of influenza was notably different from the 1889–90 epidemic in a much higher frequency of pneumonia and consequently a much higher mortality, especially among young adults. The record of pneumonia cases in the areas canvassed by the Public Health Service is therefore of interest, particularly in view of the inadequacy of pneumonia morbidity reports during either epidemic or normal periods. As noted in the introduction, cases were classified in these surveys as “pneumonia” when so reported by the householder. No attempt could be made to diagnose the cases or to inquire of the physician in charge as to the diagnosis made by him. Deaths from influenza were classed as pneumonia cases even when not so specified on the census report.

The results obtained in Charles County are evidently not comparable to those obtained in the other localities, since in this county there were only 102 pneumonia cases recorded, whereas there were 147 deaths from influenza-pneumonia. The deaths in this instance were presumably complete, as the results of the survey were checked up with the death certificates in the State registrar's office; but since it may be assumed that epidemic deaths were due almost always to complicating pneumonia, and since by no means all of the pneumonia cases resulted in death,<sup>8</sup> clearly the pneumonia cases were not complete. Because of these obvious inconsistencies, the records from Charles County have been omitted from all discussions of pneumonia morbidity.

The following table gives the pneumonia incidence for all localities (except Charles County) and for each locality.

<sup>8</sup> If we were to assume completeness of recording nonfatal cases of pneumonia, we would have a fatality rate in Charles County of 82 per cent, whereas in the other localities the average is about 25 per cent.

TABLE 16.—Incidence of pneumonia in canvassed population of each surveyed locality during epidemic of 1918-19

Locality	Rate per 1,000	Number of cases	Number of persons	Locality	Rate per 1,000	Number of cases	Number of persons
All localities <sup>1</sup> .....	17.6	2,200	130,056	New London.....	17.1	136	7,933
Minor Maryland towns.....	25.8	322	12,482	Little Rock.....	16.0	159	9,920
San Antonio.....	24.2	303	12,534	Augusta.....	15.3	63	4,123
Des Moines.....	23.6	138	5,857	Macon.....	13.0	103	7,905
Baltimore.....	18.0	599	33,361	Louisville.....	9.2	111	12,002
San Francisco.....	17.2	321	18,682	Spartanburg.....	6.7	35	5,257

<sup>1</sup> Exclusive of Charles County, Md.

The pneumonia case rate for all localities (except Charles County) was 17.6 per 1,000 persons, as compared with 280, the influenza rate, for the same localities. In other words, the percentage of influenza cases complicated by pneumonia, as determined in these surveys, was 6.3. A more detailed comparison with influenza morbidity will be taken up later. At this point it is desirable to summarize the pneumonia data themselves.

The most striking feature of the pneumonia rates is their wide range. The minor Maryland towns have a rate four times as great as that of Spartanburg (surveyed population, 5,257) and nearly three times as high as Louisville (surveyed population, 12,002).

Another point of interest is that the cities with the lowest rates are invariably in the south central part of the country, where, it is believed, the epidemic was somewhat less severe. The combined pneumonia rate for Augusta, Macon, Louisville, and Spartanburg was 10.7, whereas it was 19.6 in the other localities combined.

## AGE

The toll of the epidemic in young adult life is depicted clearly by the rates for cases of pneumonia recorded in these surveys. The pneumonia incidence in each age group for all localities is presented in Table 17. The numbers are evidently sufficient for quite reliable results.

TABLE 17.—Incidence of pneumonia by age in all localities, exclusive of Charles County, Md., during epidemic of 1918-19

Age group	Rate per 1,000	Number of cases
All ages.....	17.6	2,200
Under 1.....	24.9	60
1-4.....	26.0	204
Under 5.....	25.8	324
5-9.....	14.8	186
10-14.....	11.5	137
15-19.....	15.5	173
20-24.....	23.1	266
25-29.....	31.1	352
30-34.....	25.7	279
35-39.....	21.0	213
40-44.....	13.0	112
45-49.....	9.8	73
50-59.....	8.3	82
60-69.....	9.3	51
70 and over.....	6.5	19

There are two marked peaks. The incidence is high in children under 5 years of age, although not any higher in the first year of life than in the years immediately following. The second mode occurs in young adult life, the highest point being found in the age group 25 to 29, where the rate is three times that in the age group 10 to 14. As age advances, the rate falls off rapidly. By 50 years of age it is already one-half of the rate for the age group 25 to 29. A direct comparison with the incidence of influenza as a whole is postponed until later, but it may be pointed out that the bimodal effect noted in the case of influenza is much more marked in the case of pneumonia alone. In both the incidence falls off steadily with age after the second peak.

So striking is this bimodal tendency for pneumonia curves according to age during the epidemic that it seems well to present the rates by age for the individual localities. The numbers are limited, and it has been necessary to combine certain age groups. The data are given in Table 18 and Figure 4.

TABLE 18.—Incidence of pneumonia in each canvassed locality, by age, during epidemic of 1918-19<sup>1</sup>

Age group	Rate per 1,000 persons canvassed										
	New London	Balti- more	Minor Mary- land towns	Spar- tan- burg	Augus- ta	Macon	Des Moines	Louis- ville	Little Rock	San An- tonio	San Fran- cisco
Under 5.....	11.1	27.3	38 2	10 4	29.6	17.5	37.4	22 2	16.3	20.4	20.2
5-9.....	9 0	13.4	21 6	3.2	23.1	11.7	50 0	8 6	7 8	14 7	8.7
10-14.....	7.8	11 3	15 2	3 8	7.4	7 3	14.2	9 2	10 9	11.2	10.6
15-19.....	12.4	18 5	19 3	4.3	13 2	10 4	18 0	6 1	11 7	20.1	15.2
20-24.....	25 4	21 1	37 0	6 0	18 0	11 2	25.7	9 4	24 1	39 8	14.7
25-29.....	44.4	29 4	39.7	9.1	26 9	14 8	38 7	11 0	22 1	42 2	30.7
30-34.....	28 7	21.8	46 2	8 8	26 7	14 6	24 7	11 7	24 7	34 4	22.8
35-39.....	19 0	18 4	38.8	4 9	7.4	15 7	16 3	10 6	18 3	31 9	17.7
40-44.....	10 4	10 7	14 9	6 1	7.4	16 5	10 4	4 7	9 8	13 7	17.7
45-49.....	6.9	7 2	9.3	1.2	9.2	8 3	5.8	3.6	9 5	17 4	10 6
50 and over.....	5.4	9 4	3 9	1.2	4.5	2 1	8 9	3.6	6 9	8 7	9 0

<sup>1</sup> Inclusion of deaths from influenza as pneumonia cases was not possible in this table, except where the case was originally recorded as pneumonia. The rates, however, are not more than about 7 per cent too low.

The marked bimodal effect is noted in each locality without any exception. In all but one city the first peak comes in the under 5-year age group. Usually the second peak is in the age group 25 to 29, but in three instances it is in the age group 30 to 34, and in one in the age group 35 to 39. It is evident that the location of these modes is subject to a certain chance variation.

This strikingly high incidence of pneumonia in the young adult population, reaching a peak of nearly 5 per cent in some of the localities in the modal age group, is obviously at great variance with the normal age distribution of pneumonia. An idea of this difference may be obtained from a comparison of the age curve secured in this canvass with that for Hagerstown, Md., during a period (December 1, 1921, to April 1, 1924) without major epidemic waves, the data

having been secured in house-to-house canvasses during this period by the Public Health Service.<sup>9</sup> No comparison of the actual level of the morbidity rates seems feasible or of consequence in this connection, in view of the varying periods for which the sickness data

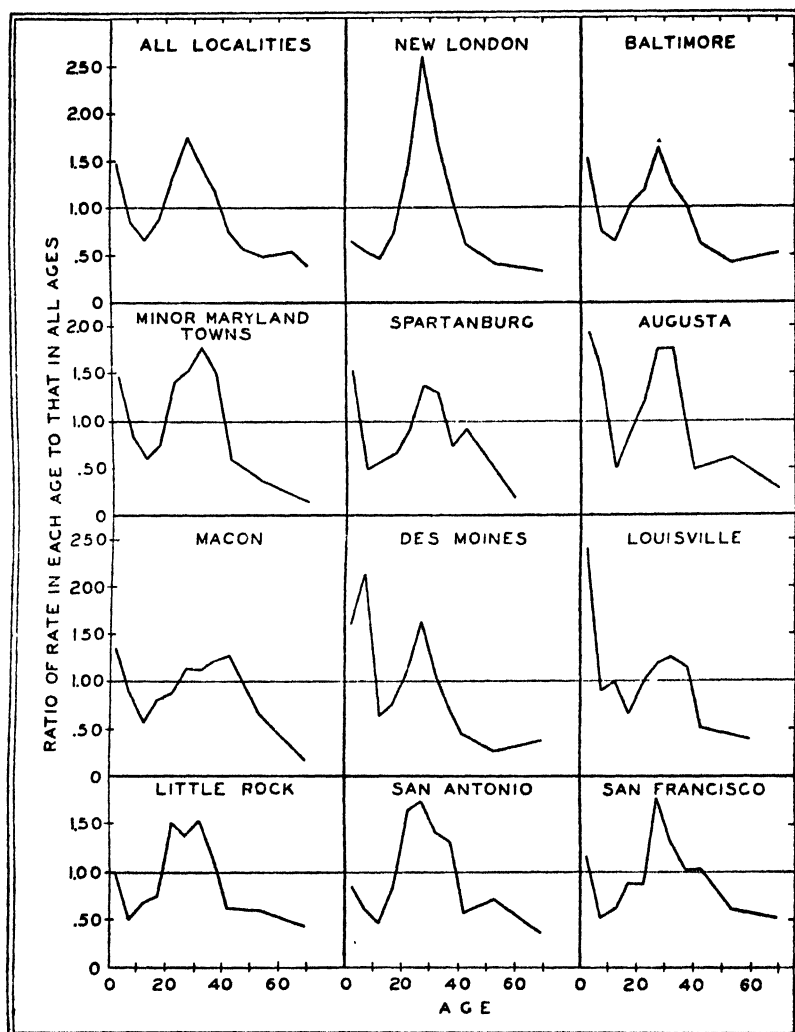


FIGURE 4.—Ratio of pneumonia case incidence in each age group to that in all ages in a canvassed population of each surveyed locality

in the various localities were secured. Comparison may be made most easily by reducing each series of rates to an index basis by dividing by the rate for all ages. These indices are given in Figure 5 and Table 19.

<sup>9</sup> The Incidence of Various Diseases according to Age. Hagerstown Morbidity Studies No. VIII. By Edgar Sydenstricker. Public Health Reports, May 11, 1928. (Reprint No. 1227.)

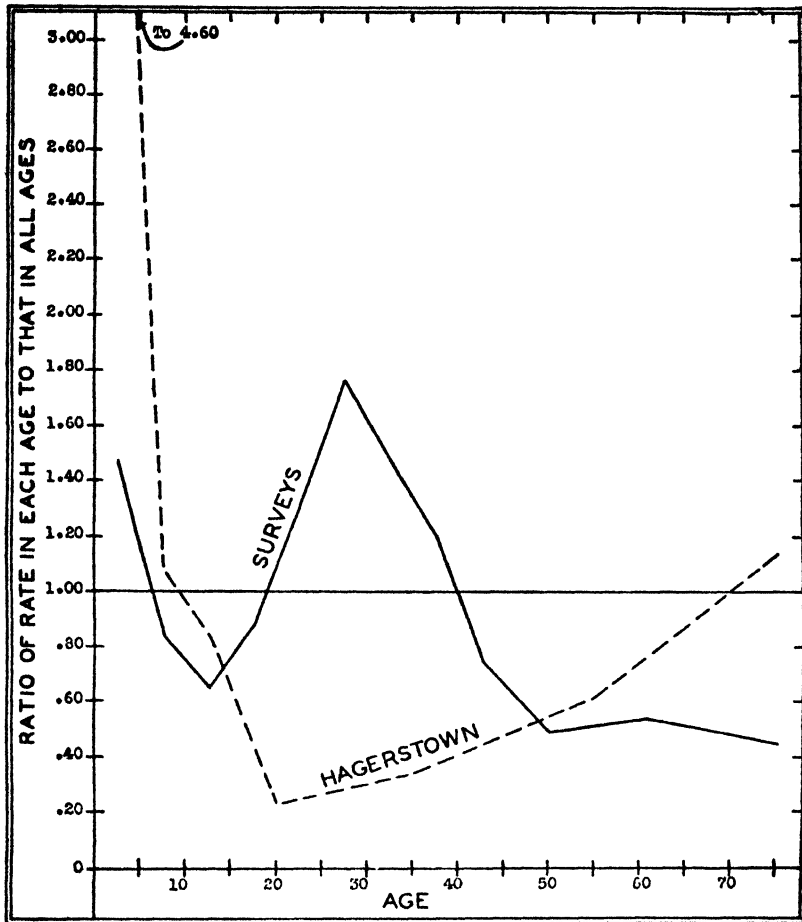


FIGURE 5.—Relative incidence of pneumonia by age in surveyed localities and in Hagerstown, Md. (data for Hagerstown from a previous sickness survey)

TABLE 19.—Relative incidence of pneumonia by age in surveyed localities during 1918-19 epidemic and in Hagerstown sickness study (rate for all ages=1.00)

Age group	Rates per 1,000		Indices	
	Surveyed localities	Hagerstown <sup>1</sup>	Surveyed localities	Hagerstown
Under 5.....	25.8	40.0	1.47	4.60
5-9.....	14.8	9.5	.84	1.09
10-14.....	11.5	7.0	.65	.84
15-19.....	15.5	2.0	.88	.23
20-24.....	23.1		1.31	
25-29.....	31.1	3.0	1.77	.84
30-34.....	25.7		1.46	
35-39.....	21.0		1.19	
40-44.....	13.0		.74	
45-54.....	8.7	5.4	.49	.62
55-64.....	9.5		.54	
65 and over.....	7.9	9.9	.45	1.14
All ages.....	17.6	8.7	1.00	1.00

<sup>1</sup> Annual rates.

In a nonepidemic period, pneumonia has its highest frequency at the beginning and end of life. In the pandemic of 1918 pneumonia showed its highest frequency in the age group 25 to 29, a subordinate peak in the age group under 5 years, and a relatively low incidence after 40 years of age. It should be observed that the contrast is really somewhat greater than that shown in the figure, since the curve for the epidemic contains a proportion of deaths from pneumonia not associated with the epidemic and therefore tending to follow the age curve as typified by the Hagerstown data.

## SEX

In contradistinction to the material presented for the total morbidity during the epidemic, the pneumonia rates are slightly higher in the males, as shown in Table 20. Spartanburg is omitted, because only 35 cases were recorded in all, but is included in the total for all localities. The rates have been adjusted to a standard age distribution.

TABLE 20.—Incidence of pneumonia by sex in each surveyed locality during epidemic of 1918-19<sup>1</sup> (adjusted to standard age distribution)

Locality	Rate per 1,000		Ratio of female rate to male	Cases	
	Male	Female		Male	Female
Augusta.....	16.5	17.0	1.08	26	35
Baltimore.....	18.7	19.1	1.02	267	327
New London.....	16.7	16.9	1.01	64	72
Macon.....	12.9	12.5	.97	44	56
Louisville.....	11.2	9.6	.86	52	58
Minor Maryland towns.....	30.6	28.1	.82	159	163
Little Rock.....	17.0	13.7	.81	81	77
San Antonio.....	27.0	21.7	.80	139	161
San Francisco.....	20.8	14.8	.71	177	144
Des Moines.....	29.4	19.5	.66	79	69

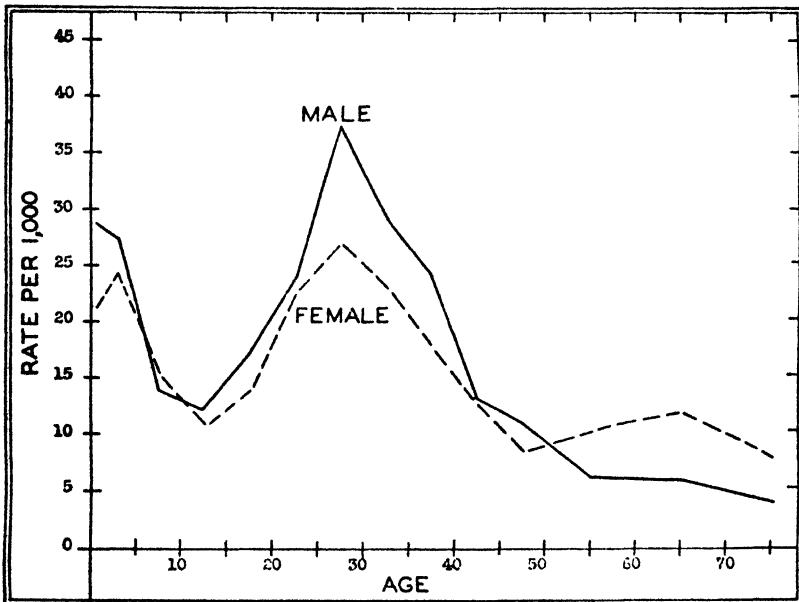
<sup>1</sup> Spartanburg omitted because of small numbers.

In only one locality is the rate for females definitely higher. The fact that we do not find higher rates among females for these serious cases suggests that possibly the difference in the incidence of influenza as a whole was due to the tendency of the women to report a higher incidence for themselves than for other members of the family. That would hardly be expected in the case of illnesses severe enough to be classed as pneumonia, as they would probably be recalled whatever member of the family had the case.

A graph is added for pneumonia incidence by sex and age. (Fig. 6.) There is a suggestion that the excess among males occurs entirely during the ages where the epidemic exerted its greatest effect. The rates are presented in Table 21.

**TABLE 21.**—*Incidence of pneumonia by sex and age in all surveyed localities during epidemic of 1918-19<sup>1</sup> (rate per 1,000)*

Age group	Male	Female
All ages .....	18.4	17.0
Under 1 .....	28.8	21.3
1-4 .....	27.5	24.5
Under 5 .....	27.7	23.8
5-9 .....	14.1	15.5
10-14 .....	12.1	11.0
15-19 .....	17.2	14.2
20-24 .....	24.1	22.5
25-29 .....	37.4	26.9
30-34 .....	29.0	22.9
35-39 .....	24.1	17.9
40-44 .....	13.2	12.8
45-49 .....	11.0	8.6
50-59 .....	6.2	10.3
60-69 .....	6.1	12.2
70 and over .....	4.2	8.2

<sup>1</sup> Exclusive of Charles County**FIGURE 6.**—Incidence of pneumonia by age and sex in all surveyed localities (except Charles County, Md.)

In view of these differences, it is of interest to compare the rates by sex and age in each locality. To do so, however, a broad grouping of ages is necessary to secure any degree of regularity. These broad groups have been chosen to bring out, as well as possible, the characteristics of the age curve (under 5 years, 5-19, 20-29, 30-39, 40 and over). The rates are given in Table 22. At the bottom of the table will be found ratios of the female rates to those of the males.



**TABLE 22.—Incidence of pneumonia by sex and broad age groups in each surveyed locality during epidemic of 1918-19<sup>1</sup>**

	Under 5 years	5-19	20-29	30-39	40 and over
RATES PER 1,000					
All localities:					
Male.....	23.3	12.2	26.3	23.8	7.6
Female.....	20.5	11.8	22.3	18.2	9.3
New London:					
Male.....	11.3	12.6	34.7	20.9	4.9
Female.....	11.0	7.2	34.1	27.3	9.5
Baltimore:					
Male.....	30.5	13.2	27.9	19.4	6.2
Female.....	24.0	15.4	23.3	20.6	10.8
Minor Maryland towns:					
Male.....	36.2	20.7	48.4	54.5	5.9
Female.....	40.1	16.9	31.5	32.7	12.5
Spartanburg:					
Male.....	3.5	1.4	6.6	7.3	—
Female.....	17.3	5.8	11.3	7.0	4.7
Augusta:					
Male.....	18.4	13.4	25.4	15.9	10.8
Female.....	40.2	15.8	20.8	14.3	5.8
Macon:					
Male.....	20.6	7.1	13.0	22.5	7.0
Female.....	11.8	11.9	13.0	8.2	10.3
Des Moines:					
Male.....	49.1	37.5	32.4	21.9	8.6
Female.....	25.4	17.7	32.1	19.2	6.9
Louisville:					
Male.....	19.2	9.0	11.5	15.4	3.6
Female.....	25.6	6.6	9.6	7.8	4.1
Little Rock:					
Male.....	22.9	10.4	25.0	26.1	7.6
Female.....	10.0	9.9	21.9	16.5	9.3
San Antonio:					
Male.....	16.7	15.3	44.6	40.8	14.0
Female.....	13.8	15.5	40.6	16.7	12.5
San Francisco:					
Male.....	10.8	12.8	31.1	24.0	19.6
Female.....	19.7	10.6	17.6	16.7	10.9

## RATIO OF FEMALE RATE TO MALE

All localities.....	88	97	85	76	122
New London.....	97	57	98	131	194
Baltimore.....	79	117	81	106	174
Minor Maryland towns.....	111	82	65	60	212
Spartanburg.....	—	—	—	—	—
Augusta.....	218	118	82	90	54
Macon.....	72	168	100	36	147
Des Moines.....	52	47	99	88	80
Louisville.....	133	73	84	51	114
Little Rock.....	44	95	88	63	122
San Antonio.....	52	101	91	65	84
San Francisco.....	95	83	57	70	50

<sup>1</sup> Inclusion of deaths from influenza as pneumonia cases was not possible in this table, except where the case was originally recorded as pneumonia.

The tendency is toward an excess in the male rate at the ages 20 to 39 and is evidently present in a great proportion of the localities.

## COLOR

The recorded pneumonia incidence was generally greater among the white than among the colored population. The following table gives the cases and rates by color for each locality in which there was a considerable number of colored (except Charles County).

TABLE 23.—*Incidence of pneumonia in canvassed white and colored populations of certain surveyed localities during epidemic of 1918-19*

Locality	Pneumonia rate per 1,000		Ratio of colored rate to white	Number of cases		Number of persons	
	White	Colored		White	Colored	White	Colored
Louisville, Ky.....	10.1	2.7	0.27	107	4	10,534	1,465
Augusta, Ga.....	19.7	8.8	.45	48	15	2,434	1,689
Baltimore, Md.....	19.1	9.3	.48	556	39	29,085	4,195
Macon, Ga.....	13.7	10.9	.80	82	21	5,971	1,930
Minor Maryland towns.....	26.2	18.7	.71	309	12	11,782	643
Little Rock, Ark.....	16.9	13.6	.80	123	36	7,262	2,654
Spartanburg, S. C.....	6.9	5.2	.75	32	3	4,652	581

In some localities the colored population seemed almost to escape the disease, while the white population was severely affected. In Baltimore the white and colored rates were, respectively, 19.1 and 9.3, and in Louisville 10.1 and 2.7. This relation is consistent with the fact that, in the canvassed populations, the mortality was slightly higher in the white than in the colored.

#### Mortality and Case Fatality

Rates of mortality in the general population of this country during the pandemic of 1918 have been thoroughly analyzed. There is no occasion to refer to them in the present paper, or to utilize the record of deaths obtained in the canvass to corroborate such findings. The value of these records lies rather in the fact that by means of them we may have a fairly precise conception of the case fatality of the 1918 epidemic in the communities surveyed. The section will deal with the case fatality of the epidemic as a whole (the percentage which the influenza-pneumonia deaths are of the influenza cases) and the case fatality of pneumonia (the percentage which these deaths are of the pneumonia cases), together with some reference to the mortality rates themselves.

It has been previously pointed out that it is impossible to distinguish between deaths reported as due to influenza and those reported as due to pneumonia—in practically all cases both of these diseases contributed to the deaths. Therefore only a slight error will be introduced in taking the relation between the influenza-pneumonia deaths and the total epidemic or pneumonia cases. Obviously these deaths also include a small number of normal or nonepidemic deaths. In view of the small size of the samples and the lack of information as to the normal rate of pneumonia in these sample areas, it has been impossible to limit the study to epidemic deaths alone.

In the six communities in which a comparison was possible, it was found that the influenza-pneumonia death rate in the canvassed population was only about 70 per cent of that in the city as a whole during the same period. The discrepancy was found consistently in each

community, varying from 57 per cent in Louisville to 84 per cent in Baltimore. The data are recorded in Table 24, which gives also the mortality rates in the surveyed areas of the localities for which mortality rates for the whole city were not determined.

TABLE 24.—*Mortality from influenza-pneumonia during epidemic period in total populations of certain surveyed localities and in canvassed populations of same localities*

Locality	Middle date of survey	Estimated population	Death rates per 1,000 based on reported deaths in total population	Deaths reported from September 1 to middle date of survey	Death rates per 1,000 canvassed persons	Ratio of rate for canvassed population to that for total population
Baltimore .....	Jan 15 <sup>1</sup>	680,000	6.2	4,239	5.2	0.84
Cumberland .....	Dec. 3	27,300	10.8	295	7.1	.66
Augusta .....	Feb. 4	55,000	6.3	348	4.4	.70
Louisville .....	Dec. 16	245,000	3.7	908	2.1	.57
Little Rock .....	Jan. 3	65,000	5.1	330	3.9	.77
San Francisco .....	Feb. 15 <sup>1</sup>	475,000	7.8	3,700	4.8	.62
New London .....	Dec. 10	25,000	-----	-----	5.8	-----
Minor Maryland towns <sup>2</sup> .....	Dec. 5	26,190	-----	-----	6.4	-----
Charles County, Md. ....	Mar. 12	18,326	-----	-----	9.1	-----
Spartanburg .....	Dec. 18	22,500	-----	-----	1.9	-----
Macon .....	Dec. 9	50,000	-----	-----	3.2	-----
Des Moines .....	Feb. 4	115,000	-----	-----	3.8	-----
San Antonio .....	Dec. 14	150,000	-----	-----	4.2	-----

<sup>1</sup> Middle date of recnvas.

<sup>2</sup> Exclusive of Cumberland (given above).

There are a number of factors which may tend to explain the lower mortality rates in the canvassed populations: (a) Deaths of nonresidents in hospitals in the city have a tendency to raise the city mortality rates, but would not appear in the canvassed population; (b) there might be a tendency for persons visited to fail to mention deaths occurring in the family some time previously; (c) canvassed populations naturally do not include certain groups of the population in which mortality rates are likely to be excessive, such as boarding houses. Whatever the cause of this discrepancy, it is manifest that the case fatality rates to be discussed are affected by it in some degree.

The case fatality for all localities (percentage of total cases which were fatal) was 1.70. If we consider the pneumonia cases alone, it was 25.5 (omitting Charles County). The data by locality are given in Table 25.

TABLE 25.—*Influenza and pneumonia case fatality in canvassed populations of each surveyed locality during epidemic of 1918-19*

Locality	Fatality rate per 100 cases		Per cent of influenza complicated by pneumonia	Number of cases		Number of deaths
	Influenza	Pneumonia		Influenza	Pneumonia	
All localities.....	1.70	125.5	16.8	42,920	12,290	730
New London.....	3.14	33.8	9.3	1,466	136	46
Charles County, Md.....	2.25			6,546		147
San Francisco.....	2.24	28.0	8.0	4,021	321	90
Baltimore.....	2.10	28.7	7.3	8,199	599	172
Minor Maryland towns.....	1.66	26.1	6.4	5,060	322	84
Des Moines.....	1.63	15.9	10.2	1,353	138	22
Macon.....	1.49	24.3	6.1	1,681	103	25
Louisville.....	1.39	22.5	6.2	1,797	111	25
Augusta.....	1.28	28.6	4.5	1,405	63	18
Little Rock.....	1.09	24.5	4.5	3,565	159	39
Spartanburg.....	.89	28.6	3.1	1,126	35	10
San Antonio.....	.78	17.2	4.5	6,701	303	52

<sup>1</sup> Exclusive of Charles County, Md.

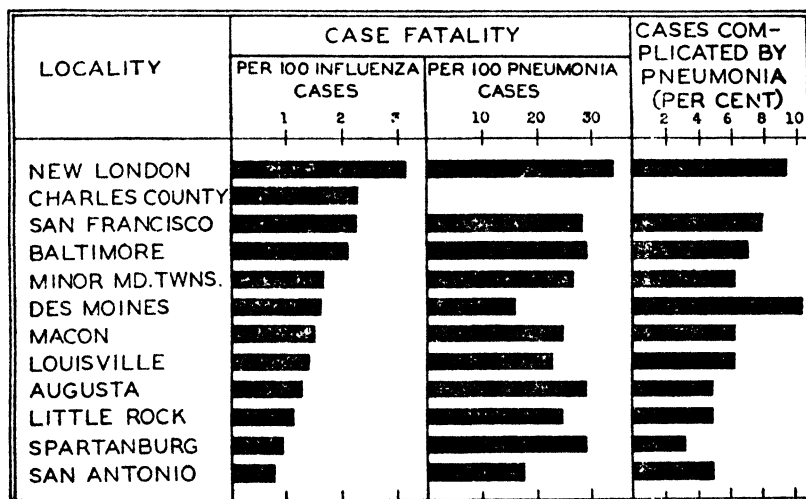


FIGURE 7.—Case fatality of influenza and of pneumonia, with percentage of cases complicated by pneumonia, in specified localities

A great variation in the fatality rates is observable, which is no doubt partly due to the small number of deaths. For total influenza, the fatality varies from 3.14 per cent in New London to 0.78 per cent in San Antonio. The coefficient of variability is 37.<sup>10</sup> The pneumonia fatality showed much less variation, the coefficient being 23. The highest rate was in New London (33.8) and the lowest in Des Moines (15.9). These fatality rates are presented by graph in Figure 7, together with the percentage of cases complicated by pneumonia.

<sup>10</sup> In making this calculation the minor Maryland towns were subdivided. See p. 305. Coefficient of variability is the standard deviation times 100 divided by the mean.

Examination of the graph shows that the influenza case fatality seemed somewhat lower in the south central part of the country. A map has been included (fig. 8) to bring this out more clearly. The fatality rate is indicated by symbols of varying degrees of density.

A comparison of the influenza case fatality with that obtained in certain other house-to-house canvasses is next given (Table 26). Since the available data are for the northeast section of the country, the only rates from the Public Health Service surveys which have been included in the table are for New London, Baltimore, and the minor Maryland towns.

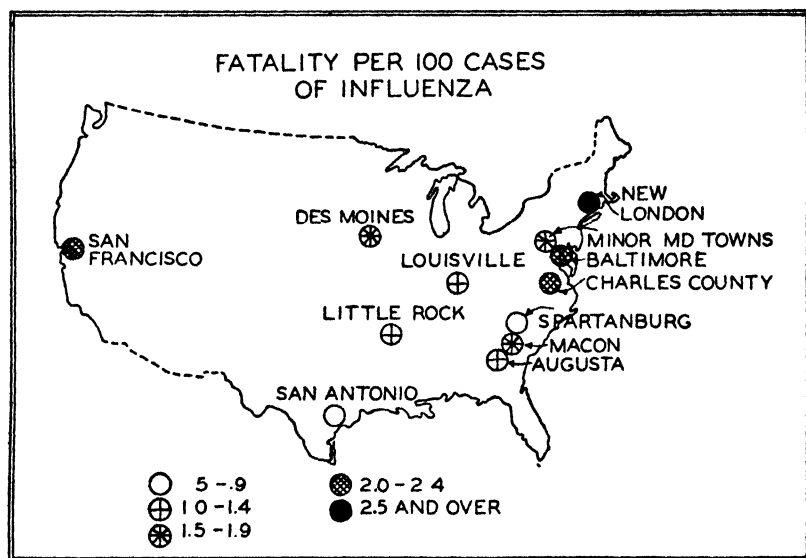


FIGURE 8.—Case fatality in different cities

TABLE 26.—Influenza case fatality rates during pandemic of 1918 in certain house-to-house canvasses

Locality	Case fatality (per-centage)	Number of persons surveyed	Locality	Case fatality (per-centage)	Number of persons surveyed
U. S. Public Health Surveys:			New Britain, Conn. <sup>1</sup>	3.9	2,757
New London.....	3.1	7,933	Watertown, N. Y. <sup>2</sup>	3.1	20,473
Baltimore.....	2.1	33,361	Boston <sup>3</sup>	2.5	10,080
Minor Maryland towns....	1.7	12,482	Oswego, N. Y. <sup>4</sup>	2.4	12,952

<sup>1</sup> Statistics of the 1918 Epidemic of Influenza in Connecticut. 1920. Journ. Infec. Dis., 26:185. Winslow, C.-E. A., and Rogers, J. F.

<sup>2</sup> Some Statistics of Influenza in Oswego and Watertown in 1918-19. Off. Bull. N. Y. State Dept. of Health, 4:53. Baker, G. W.

<sup>3</sup> Influenza: An Epidemiological Study. Am. Journ. Hyg., Monograph No. 1, 260 pp. 1921. Vaughan, W. T.

A question arises as to whether the incidence of influenza or the incidence of pneumonia determined the mortality rates in the sur-

veyed communities. This question can be considered from several angles. For instance, the fact that the case fatality of pneumonia was less variable than that of the epidemic as a whole (as previously noted) suggests that it was the presence of the secondary invaders which primarily determined the mortality. Another point of view is to consider the correlation of the rates of influenza, pneumonia, and deaths. The highest correlation is between the incidence of pneumonia and the mortality rates, but there is a definite correlation in the

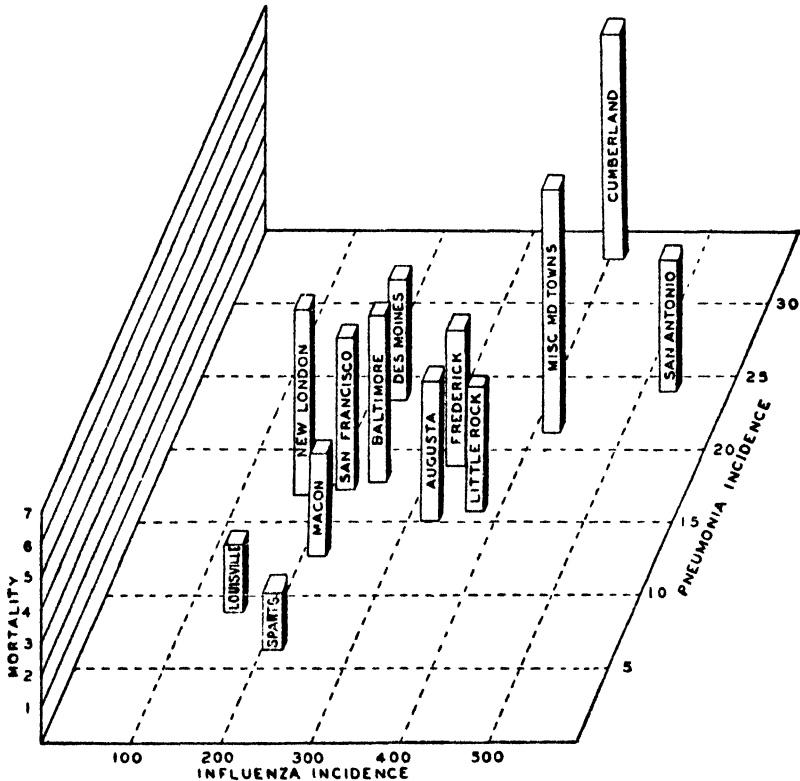


FIGURE 9.—Composite picture of incidence and mortality in the various localities

other two instances. The coefficients are as follows: Influenza incidence-pneumonia incidence,  $+ .63$ ; influenza incidence-mortality,  $+ .66$ ; pneumonia incidence-mortality,  $+ .77$ . A composite picture of the interrelations by locality is shown in Figure 9, where the height of the vertical bars represents the mortality rates.

#### AGE

The age curve of mortality from the epidemic is given for all localities in Table 27, first for both sexes combined and then for males and females separately.

TABLE 27.—*Mortality per 1,000 persons from influenza-pneumonia by sex and age in all surveyed localities during epidemic of 1918-19*

Age group	Both sexes	Male	Female	Age group	Both sexes	Male	Female
All ages.....	5.0	5.3	4.7	20-24.....	6.2	6.8	5.8
Under 1.....	15.2	17.1	13.3	25-29.....	9.9	13.3	7.6
1-4.....	6.2	5.4	7.1	30-34.....	7.9	9.1	6.8
Under 5.....	7.9	7.6	8.3	35-39.....	6.3	7.9	4.7
5-9.....	2.2	1.9	2.4	40-44.....	4.0	4.1	3.9
10-14.....	2.1	1.4	2.8	45-49.....	2.9	3.5	2.3
15-19.....	3.4	4.0	2.9	50-59.....	2.6	2.8	2.4
				60-69.....	4.3	3.3	5.6
				70 and over.....	5.1	4.2	5.8

The most obvious point to be brought out is the extraordinary age curve of mortality during the epidemic. There is no necessity of emphasizing this fact here, since it has been thoroughly recognized in all accounts of the 1918-19 epidemic and the contrast with the usual experience has been apparent to everyone.

Discussion of the differences between the two sexes will be postponed until later (See p. 334.)

The fatality of the epidemic according to age is of extraordinary interest, because it brings out so clearly the severe toll among young adults. The rates are presented in Table 28, for both the case fatality of influenza and that of pneumonia alone.

TABLE 28.—*Fatality of influenza and of pneumonia by age, in all surveyed localities during epidemic of 1918-19 (percentage of cases which died)*

Age group	Influenza	Pneumonia <sup>1</sup>	Age group	Influenza	Pneumonia <sup>1</sup>
All ages.....	1.7	25.5	20-24.....	1.9	25.0
Under 1.....	7.4	43.3	25-29.....	2.9	30.1
1-4.....	1.8	18.6	30-34.....	2.4	28.0
Under 5.....	2.5	23.1	35-39.....	2.1	28.6
5-9.....	0.6	11.8	40-44.....	1.7	28.6
10-14.....	0.6	16.1	45-49.....	1.4	27.4
15-19.....	1.0	19.1	50-59.....	1.5	28.0
			60-69.....	3.1	45.1
			70 and over.....	5.1	57.9

<sup>1</sup> Exclusive of Charles County, Md.

The very high incidence of pneumonia in young adult ages (previously discussed) is evidently the most important factor in the determination of the curves shown herewith. The fatality of influenza rises to nearly 3 per cent in the age group 25 to 29 and then falls to less than 1.5 per cent. In old age it rises again, reaching 5 per cent or more. Pneumonia cases themselves do not show this striking change in fatality in young adult life. As a matter of fact, the pneumonia fatality curve, except for an expected high value at the beginning of life, rises rather consistently from 12 per cent in the age group 5 to 9 to nearly 60 per cent in old age. It must again be stressed that the picture of pneumonia fatality includes the cases and deaths

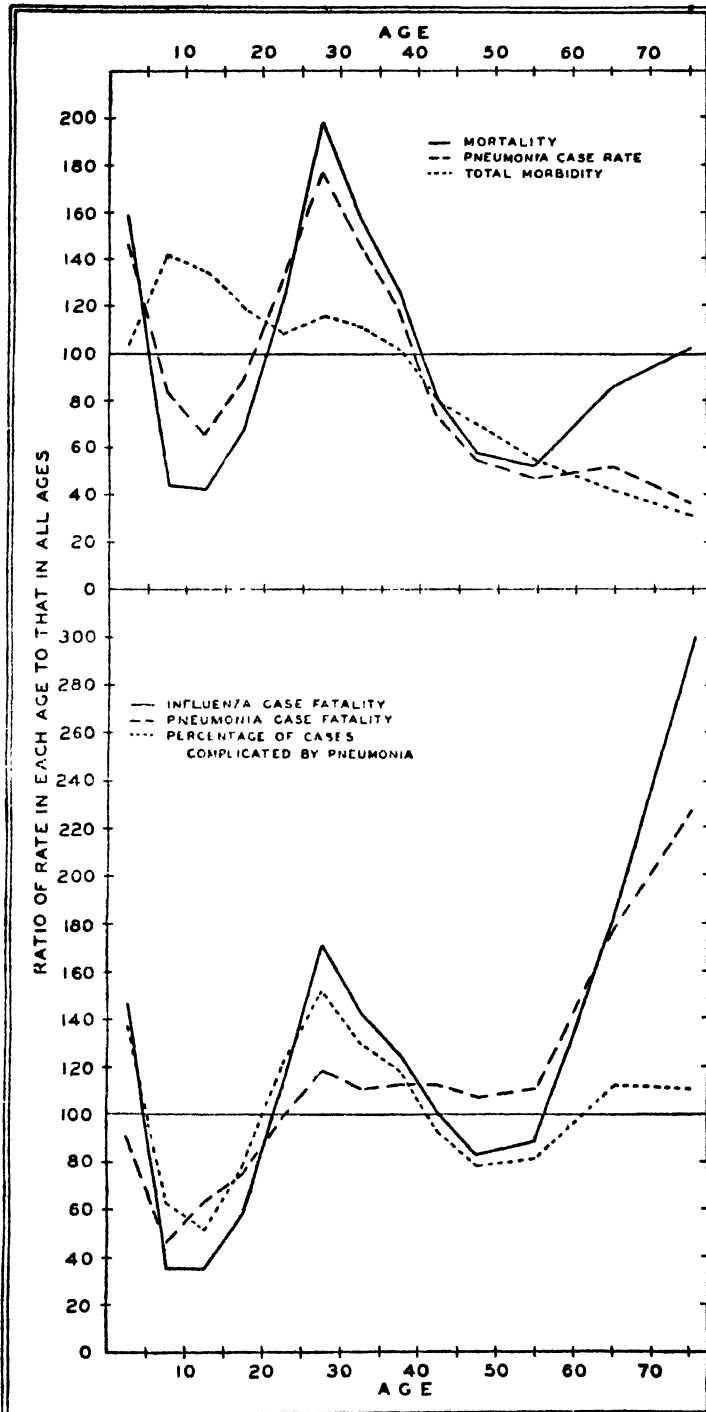


FIGURE 10.—Epidemic relations, by age, on relative basis (all ages=1.00). (Charles County omitted in rates involving pneumonia incidence)



which would have occurred at this time of year quite apart from the epidemic.

Perhaps it would be convenient to summarize in a single graph all the relations which have been brought out with respect to age, because the striking manner in which the epidemic affected young adults is so clearly depicted. Figure 10, accordingly, gives the age curves for influenza incidence, pneumonia incidence, mortality, percentage which the pneumonia cases were of the influenza cases, case fatality of the epidemic as a whole and case fatality of pneumonia. The indices (ratio of the rate in each age group to that for all ages) are given in Table 29.

TABLE 29.—*Ratio of rates in each age group to those in all ages in all canvassed localities during epidemic of 1918-19*

Age group	Influenza incidence	Pneumonia incidence <sup>1</sup>	Per cent complicated by pneumonia <sup>1</sup>	Mortality	Influenza case fatality	Pneumonia case fatality <sup>1</sup>
All ages.....	1 00	1 00	1 00	1 00	1.00	1.00
Under 5.....	1 04	1 47	1 37	1 59	1 47	.91
5-9.....	1 42	.84	.62	.44	.35	.46
10-14.....	1 34	.65	.51	.42	.35	.63
15-19.....	1 18	.88	.78	.68	.59	.75
20-24.....	1 08	1 31	1 21	1 24	1 12	.98
25-29.....	1 16	1 77	1 51	1 98	1 71	1.18
30-34.....	1 11	1 46	1 29	1 58	1 41	1.10
35-39.....	1.02	1 19	1 17	1 26	1 24	1.12
40-44.....	.80	.74	.92	.80	1.00	1.12
45-49.....	.70	.55	.78	.58	.82	1.07
50-59.....	.55	.47	.81	.52	.88	1.10
60-69.....	.42	.52	1 11	.86	1 82	1.77
70 and over.....	.31	.37	1.10	1 02	3.00	2.27

Exclusive of Charles County, Md

As in the case of comparisons by locality, these relations indicate that the mortality is determined primarily by the incidence of pneumonia. The cause of the high mortality in young adult life evidently lies in the complicating pneumonia. All of the relations shown in this figure bear this out: The peak in the pneumonia case incidence in young adult life, coinciding almost completely with that of the mortality from the epidemic; the absence of a corresponding peak in the total epidemic morbidity (except a minor secondary mode) and (by corollary) a peak in young adult life for influenza case fatality and the percentage of cases complicated by pneumonia, but not for pneumonia case fatality itself.

#### SEX

Mortality and case fatality rates for influenza and for pneumonia were higher among men than among women, the differences being about 10 per cent on the average. In the case of influenza fatality, this may have been due to the fact that the reports were usually obtained from the female members of the household, giving

a relatively higher rate of influenza among them. But a similar explanation is hardly possible in the case of pneumonia fatality. Table 30 gives the relations between the two sexes for all the measures which have been employed in this report. All ratios based on pneumonia incidence are exclusive of Charles County, Md., as indicated. For the other cases, all 12 localities are used. Since it was found that adjustment for age made little difference in the ratio between the two sexes (see p. 324), these rates are given without adjustment.

TABLE 30.—*Epidemic relations by sex in all surveyed localities during epidemic of 1918-19*

	Male	Female	Ratio female to male
Influenza incidence (per 1,000).....	288	299	104
Pneumonia incidence <sup>1</sup> (per 1,000).....	18.4	17.0	92
Percentage of influenza cases which were complicated by pneumonia <sup>1</sup> .....	6.8	5.9	87
Mortality (per 1,000).....	5.3	4.7	89
Case fatality—Influenza (per cent).....	1.8	1.6	89
Case fatality—pneumonia alone <sup>1</sup> (per cent).....	26.5	24.5	92

<sup>1</sup> Exclusive of Charles County, Md.

The mortality rates by age and sex have already been given. (Table 27.) The excess among men would seem to occur at the ages when the epidemic took its severest toll (20 to 40). This is equally borne out in the fatality rates, which are given in Figure 11, especially in the case of influenza case fatality. The two sexes evidently present a quite different picture, which may be regarded as of importance in connection with the epidemiological problems raised by the disease. The data are given in Table 31. Table 32 gives corresponding figures for the percentage of cases complicated by pneumonia.

TABLE 31.—*Fatality of influenza and of pneumonia by age and sex in all surveyed localities during epidemic of 1918-19*

Age group	Fatality per 100 cases of influenza		Fatality per 100 cases of pneumonia <sup>1</sup>		Age group	Fatality per 100 cases of influenza		Fatality per 100 cases of pneumonia <sup>1</sup>	
	Males	Females	Males	Females		Males	Females	Males	Females
All ages.....	1.8	1.6	26.5	24.5	20 to 24.....	2.4	1.7	27.5	23.6
Under 1.....	8.0	6.7	44.1	42.3	25 to 29.....	4.1	2.2	36.3	24.5
1 to 4.....	1.5	2.2	12.9	25.0	30 to 34.....	2.8	2.1	29.9	25.9
Under 5.....	2.4	2.8	19.0	26.0	35 to 39.....	2.7	1.6	31.1	25.3
5 to 9.....	.5	.6	11.4	12.2	40 to 44.....	1.7	1.7	29.1	28.1
10 to 14.....	.4	.7	11.4	20.9	45 to 49.....	1.8	1.1	28.6	25.8
15 to 19.....	1.2	.8	22.1	16.1	50 to 59.....	1.7	1.3	40.0	21.2
					60 to 69.....	2.3	3.8	43.8	45.7
					70 and over.....	4.2	5.7	60.0	57.1

<sup>1</sup> Exclusive of Charles County.

**TABLE 32.**—*Percentage of influenza cases which were complicated by pneumonia, by age and sex in all localities, during epidemic of 1918-19<sup>1</sup>*

Age group	Both sexes	Male	Female	Age group	Both sexes	Male	Female
All ages.....	6.3	6.8	5.9	20 to 24.....	7.6	9.4	6.8
Under 1.....	12.2	13.6	11.0	25 to 29.....	9.5	12.1	7.9
1 to 4.....	8.1	8.2	7.9	30 to 34.....	8.1	9.4	7.0
Under 5.....	8.6	8.9	8.3	35 to 39.....	7.4	8.5	6.2
5 to 9.....	3.9	3.7	4.1	40 to 44.....	5.8	5.7	5.8
10 to 14.....	3.2	3.4	3.0	45 to 49.....	4.9	5.7	4.1
15 to 19.....	4.9	5.8	4.2	50 to 59.....	5.1	4.1	6.0
				60 to 69.....	7.0	5.0	8.5
				70 and over.....	6.9	4.5	8.5

<sup>1</sup> Exclusive of Charles County.**COLOR**

Outside of Charles County, Md., the fatality rate per 100 cases of influenza was about the same in the white and colored populations,<sup>11</sup> 1.7 and 1.9, respectively. The pneumonia case fatality (excluding Charles County) in the white and colored was 28.8 and 39.8, respectively. Thus we are probably warranted in concluding that the case fatality was really higher in the colored populations of the surveyed communities.

**Summary**

The purpose of this report has been to make a permanent record, for future reference, of the statistics obtained by the surveys, not to offer any extended discussion of their meaning. Hence there is no necessity for any detailed summary of the findings. Certain major points, however, are of considerable interest.

Special surveys were undertaken at the close of the 1918-19 epidemic of influenza to determine for a population of known sex, age, and color composition the approximate incidence of the disease, and also to ascertain the relations between the epidemic morbidity, the incidence of pneumonia, and the mortality. Preliminary reports on the surveys were published at the completion of the work.

The incidence of influenza (including pneumonia and "doubtful" cases) was 294 per 1,000 for all localities, varying from 535 to 150. These rates correspond closely with what was found in other surveys of the same general character. There seemed to be no clear indication of a geographical difference in incidence.

The incidence was highest among very young persons (age group 5 to 9 years), with a secondary peak at about 30 years. The rate of attack fell off rapidly in older life. Among old people the incidence appeared to be not more than one-third of that among the young.

Slightly higher influenza rates were found among females (except in two localities), but it seemed possible that this was due to the fact that most of the reports as to illness came from the women, who

<sup>11</sup> New London, San Antonio, Des Moines, and San Francisco excluded. In the case of these calculations by color, it was not possible to add to the pneumonia cases deaths reported as due to influenza.

might remember their own illnesses better than those of other members of the family. The colored had lower rates of influenza incidence, but it is possible that the reporting among them was less complete.

A special effort was made to determine the incidence of pneumonia as complicating the original case of influenza. For all localities the

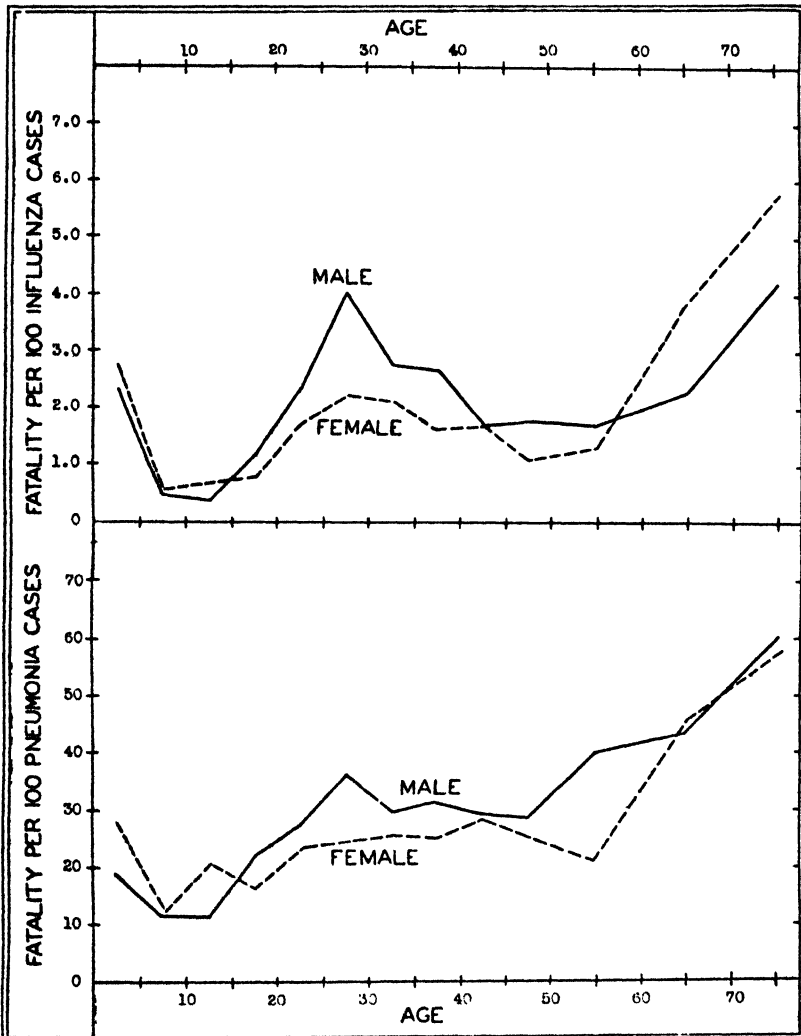


FIGURE 11.--Influenza and pneumonia fatality, by age and sex, in all surveyed localities during the 1918-19 epidemic. (Pneumonia fatality is exclusive of Charles County)

pneumonia rate was 17.6 per 1,000 persons, varying from 25.8 to 6.7. In other words, about 6 per cent of the influenza cases were complicated by pneumonia.

The peak in young adult life suggested in the epidemic morbidity as a whole comes out with remarkable clarity in the pneumonia

incidence. For all localities the rate is about 25 per 1,000 at the beginning of life, falls to about 11 in the age group 10 to 14, and then rises to a secondary mode of about 31 in the age group 25 to 29. After that the rate falls rather steadily to the end of life. This age distribution is, of course, fundamentally different from the normal course of pneumonia incidence, which is high among the very young and among the very old. The striking mode in young adult life is found in each locality without exception.

The pneumonia incidence rates were slightly higher among males, the difference being especially marked in young adult life. The recorded pneumonia incidence was higher among the white than among the colored.

The deaths from influenza-pneumonia during the epidemic period were obtained primarily to determine the relations as to case fatality. The fatality per 100 cases of influenza (total epidemic morbidity) was 1.70 for all localities, and that per 100 cases of pneumonia alone was 25.5. The fatality for the surveyed localities (total epidemic morbidity) seemed about the same as that recorded in other studies.

The fatality seemed lower in the southern and central localities, which is in line with other reports on this epidemic. It appeared that the incidence of pneumonia, rather than that of influenza as a whole, determined the mortality in the various localities.

The fatality of influenza (total epidemic morbidity) was very high among young adults, as would be expected in view of the high peak of pneumonia at these ages. The fatality of pneumonia did not show this peak, showing that the tendency to a severe toll at these ages was characteristic of the pneumonia itself, rather than of death from it.

The fatality rates, both for influenza and for pneumonia, were higher among men than among women. In the case of influenza, this may reflect the tendency of the women to report more adequately; but that would hardly explain the difference in the case of pneumonia fatality. The excess was most marked in young adult life.

The pneumonia case fatality was much higher among the colored than among the white.

#### Acknowledgments

Special acknowledgment is made to the Influenza Commission of the Metropolitan Life Insurance Co., which defrayed part of the expenses of the tabulation and analysis of the data collected in the surveys.

The surveys themselves were made under the direction of Senior Surg. W. H. Frost and Principal Statistician Edgar Sydenstricker, and the first papers reporting the results were prepared by them. Doctor Frost and Mr. Sydenstricker also supervised the more extended analysis on which this paper is based.

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## DEATHS DURING WEEK ENDED JANUARY 16, 1932

Summary of information received by telegraph from industrial insurance companies, for the week ended January 16, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan 16, 1932	Corresponding week, 1931
Policies in force.....	74, 179, 429	75, 092, 689
Number of death claims.....	15, 052	17, 116
Death claims per 1,000 policies in force, annual rate.....	10. 6	11. 9
Death claims per 1,000 policies, first 2 weeks of year, annual rate.....	9.9	11. 2

Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended January 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Jan. 16, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 2 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8, 402	12. 1	633	4. 53	14. 0	803	12. 5	14. 0
Akron.....	45	8. 9	3	37	7. 9	4	9. 6	8. 7
Albany <sup>4</sup> .....	37	14. 8	0	0	14. 9	2	16. 6	16. 0
Atlanta <sup>5</sup> .....	77	14. 2	9	88	15. 4	9	17. 2	16. 0
White.....	37	10. 3	3	44	11. 9	5	12. 5	13. 6
Colored.....	40	21. 9	6	172	22. 4	4	26. 5	20. 7
Baltimore <sup>5</sup> .....	230	14. 7	18	64	14. 2	10	14. 8	14. 9
White.....	177	13. 8	10	45	12. 8	11	14. 0	13. 8
Colored.....	53	18. 4	8	129	20. 6	8	18. 4	19. 9
Birmingham <sup>6</sup> .....	61	11. 5	5	52	13. 6	10	13. 4	14. 6
White.....	27	8. 2	4	66	10. 3	2	10. 7	9. 5
Colored.....	34	16. 9	1	27	18. 8	8	17. 9	22. 9
Boston.....	242	16. 0	25	76	16. 6	20	15. 9	15. 6
Bridgeport.....	38	13. 5	4	71	12. 1	4	13. 7	14. 4
Buffalo.....	146	13. 0	9	43	15. 0	13	13. 6	14. 2
Cambridge.....	36	12. 4	7	115	11. 4	5	16. 4	12. 6
Camden.....	39	17. 1	3	53	14. 5	2	14. 9	16. 0
Canton.....	25	12. 1	5	124	13. 2	5	11. 1	11. 2
Chicago <sup>1</sup> .....	683	10. 1	51	50	10. 8	72	11. 3	11. 1
Cincinnati.....	131	14. 8	5	32	19. 2	14	17. 6	20. 5
Cleveland.....	192	10. 9	16	52	11. 7	13	11. 5	11. 3
Columbus.....	82	14. 3	4	40	13. 6	4	16. 7	14. 3
Dallas <sup>6</sup> .....	59	10. 9	10	---	13. 2	6	11. 6	13. 8
White.....	45	10. 1	7	---	12. 7	4	9. 8	13. 1
Colored.....	14	15. 0	3	---	15. 4	2	19. 9	17. 6
Dayton.....	54	11. 9	5	72	12. 8	8	11. 4	11. 6
Denver.....	107	19. 0	4	39	17. 7	5	21. 8	17. 1
Des Moines.....	33	11. 8	0	0	14. 1	1	11. 3	13. 4
Detroit.....	270	8. 2	37	66	8. 8	43	8. 7	8. 7
Duluth.....	15	7. 7	2	58	13. 8	2	9. 0	13. 6
El Paso.....	27	13. 2	3	---	17. 4	5	15. 4	21. 9
Erle.....	33	14. 5	3	64	12. 4	1	11. 6	11. 3
Fall River <sup>7</sup> .....	32	14. 5	2	53	15. 8	5	12. 7	13. 8
Flint.....	18	5. 5	1	15	8. 6	5	7. 4	7. 8
Fort Worth <sup>8</sup> .....	34	10. 4	1	---	12. 5	2	10. 6	13. 7
White.....	25	9. 1	1	---	13. 0	2	9. 4	12. 5
Colored.....	9	17. 6	0	---	9. 6	0	16. 6	20. 1
Grand Rapids.....	30	9. 0	1	17	10. 3	2	8. 0	9. 0
Houston <sup>4</sup> .....	76	12. 2	4	---	13. 1	4	11. 8	12. 9
White.....	46	10. 1	2	---	14. 2	4	10. 0	13. 2
Colored.....	30	18. 3	2	---	10. 1	0	16. 8	11. 9
Indianapolis <sup>4</sup> .....	92	12. 8	7	57	15. 4	9	13. 6	14. 9
White.....	79	12. 6	7	64	14. 9	9	12. 8	14. 4
Colored.....	13	14. 7	0	0	20. 8	0	19. 3	19. 0

See footnotes at end of table.

Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended January 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued.

City	Week ended Jan. 16, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 2 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Jersey City.....	66	10.8	5	41	11.8	9	11.7	12.3
Kansas City, Kans. <sup>4</sup> .....	27	11.4	0	0	15.7	5	14.1	15.9
White.....	16	8.4	0	0	14.2	3	13.3	14.4
Colored.....	11	24.3	0	0	22.2	2	17.6	22.2
Kansas City, Mo.....	91	11.4	7	79	15.4	8	10.2	15.0
Knoxville <sup>4</sup> .....	31	14.5	6	152	15.3	6	11.7	15.5
White.....	24	13.4	6	107	14.3	5	10.6	13.7
Colored.....	7	20.0	0	0	20.5	1	17.1	24.9
Long Beach.....	30	9.7	0	0	11.3	1	11.2	10.6
Los Angeles.....	326	12.3	16	47	13.5	22	12.8	14.1
Louisville <sup>4</sup> .....	103	17.4	2	18	16.4	7	15.5	20.9
White.....	80	16.0	2	21	14.4	6	14.2	19.2
Colored.....	23	25.2	0	0	27.3	1	22.4	30.1
Lowell <sup>1</sup> .....	29	15.1	2	52	12.0	4	14.1	13.3
Lynn.....	22	11.2	0	0	15.2	1	12.4	14.7
Memphis <sup>4</sup> .....	101	20.0	13	142	15.9	2	17.8	16.8
White.....	40	12.8	3	51	12.1	0	12.5	14.7
Colored.....	61	31.7	10	301	22.1	2	25.2	20.3
Miami <sup>4</sup> .....	31	14.2	1	28	14.4	3	14.5	12.3
White.....	24	14.2	1	38	16.1	2	13.9	13.6
Colored.....	7	14.5	0	0	8.2	1	16.5	8.2
Milwaukee.....	101	8.8	0	29	10.0	9	9.8	10.3
Minneapolis.....	83	9.0	6	39	11.6	14	9.6	12.8
Nashville <sup>4</sup> .....	34	11.3	3	45	18.1	2	13.7	17.3
White.....	26	11.9	3	59	16.2	1	13.3	14.8
Colored.....	8	9.8	0	0	23.1	1	14.6	23.8
New Bedford <sup>1</sup> .....	23	10.7	1	29	12.5	2	12.3	13.9
New Haven.....	47	15.1	1	20	10.3	1	14.1	12.2
New Orleans <sup>4</sup> .....	137	15.1	9	51	21.0	12	16.2	21.4
White.....	85	13.2	4	35	18.5	4	13.8	18.6
Colored.....	52	19.8	5	82	27.1	8	22.1	28.3
New York.....	1,409	10.0	126	56	15.7	165	11.5	14.9
Bronx Borough.....	220	8.3	10	29	11.4	19	8.9	10.3
Brooklyn Borough.....	525	10.2	49	54	14.8	60	10.3	14.1
Manhattan Borough.....	558	16.4	53	76	23.9	64	17.5	22.6
Queens Borough.....	152	6.6	10	42	10.0	18	7.6	9.8
Richmond Borough.....	44	13.7	4	79	13.1	4	15.6	14.4
Newark, N. J.....	96	11.2	9	49	13.5	8	11.2	13.1
Oakland.....	70	12.2	4	50	13.0	2	12.3	14.4
Oklahoma City.....	40	10.2	4	55	11.9	6	11.0	12.2
Omaha.....	58	13.9	1	11	15.6	6	14.1	14.7
Paterson.....	40	15.0	2	36	17.3	4	15.4	15.2
Peoria.....	21	9.9	1	28	18.8	5	11.5	16.8
Philadelphia.....	451	11.9	25	39	16.5	43	13.1	16.1
Pittsburgh.....	157	12.1	15	69	16.7	21	11.1	16.6
Portland, Oreg.....	85	14.3	2	26	13.8	4	14.3	14.7
Providence.....	89	18.1	8	77	13.9	11	18.3	15.3
Richmond <sup>4</sup> .....	57	16.1	8	121	16.1	7	17.2	16.4
White.....	31	12.2	4	90	11.5	2	14.4	13.9
Colored.....	26	25.7	4	183	27.6	5	24.3	22.7
Rochester.....	85	13.3	9	86	11.5	9	12.4	13.1
St. Louis.....	288	18.1	23	82	16.3	23	15.8	16.5
St. Paul.....	52	9.7	5	53	11.0	4	9.5	11.4
Salt Lake City <sup>4</sup> .....	29	10.4	0	0	14.2	4	11.9	14.0
San Antonio.....	83	17.6	12	16.9	16	15.0	16.1	17.0
San Diego.....	52	16.6	3	65	14.7	5	15.7	17.0
San Francisco.....	163	12.9	4	28	16.6	5	15.0	14.6
Schenectady.....	15	8.1	1	20	8.1	1	9.8	8.4
Seattle.....	86	11.9	4	40	16.4	5	12.1	14.5
Somerville.....	22	10.8	1	40	8.9	0	12.1	11.6
South Bend.....	19	8.0	2	58	5.8	1	8.5	5.8
Spokane.....	29	13.0	1	27	17.5	6	14.5	14.1
Springfield, Mass.....	38	12.9	5	84	9.6	0	13.4	10.6
Syracuse.....	54	13.1	4	52	12.2	8	12.0	13.0
Tacoma.....	22	10.6	2	55	14.5	2	10.1	13.8
Tampa <sup>4</sup> .....	26	12.6	3	86	14.4	4	11.4	17.1
White.....	18	11.0	2	70	12.0	2	10.7	15.1
Colored.....	8	18.3	1	158	23.5	2	13.8	24.7
Toledo.....	68	11.8	4	43	11.2	3	11.6	11.8

See footnotes at end of table.



*Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended January 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 16, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 2 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Trenton.....	33	13.9	0	0	12.6	1	16.4	19.6
Utica.....	33	16.8	1	28	20.4	3	14.2	17.6
Washington, D. C. <sup>6</sup> .....	167	17.7	10	56	17.7	8	15.9	18.6
White.....	111	16.2	4	33	15.2	5	14.2	16.3
Colored.....	56	21.4	6	107	24.3	3	20.3	24.7
Waterbury.....	15	7.7	0	0	6.7	1	8.2	7.8
Wilmington, Del. <sup>7</sup> .....	32	15.7	2	45	10.3	6	15.9	14.7
Worcester.....	49	12.9	3	42	16.9	1	13.7	14.9
Yonkers.....	23	8.5	2	52	11.6	4	8.6	11.1
Youngstown.....	30	8.9	5	81	9.3	0	9.2	12.2

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33, Baltimore, 18, Birmingham, 38, Dallas, 17, Fort Worth, 16, Houston, 27, Indianapolis, 12, Kansas City, Kans., 19, Tampa, 21, Knoxville, 16, Louisville, 15, Memphis, 38, Miami, 23, Nashville, 28, New Orleans, 29, Richmond, 29, and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930, decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended January 23, 1932, and January 24, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 23, 1932, and January 24, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931
<b>New England States:</b>								
Maine	2	5	181	17	633	20	0	0
New Hampshire	2	3			41	25	0	0
Vermont		2			34	8	0	0
Massachusetts	55	61	29	114	319	613	1	4
Rhode Island	4	8		1	1,056		0	1
Connecticut	9	15	7	140	121	86	1	4
<b>Middle Atlantic States</b>								
New York	168	126	129	1,140	884	329	6	20
New Jersey	30	58	11	744	101	388	5	4
Pennsylvania	112	127			1,030	1,022	9	8
<b>East North Central States</b>								
Ohio	86	39	15	7	111	110	1	5
Indiana	69	64	29	33	113	71	6	12
Illinois	170	162	33	263	68	905	8	6
Michigan	46	48	1	2	217	113	6	6
Wisconsin	19	24	28	82	89	172	3	1
<b>West North Central States</b>								
Minnesota	17	8	1	1	68	28	1	1
Iowa	26	8			3	3	0	2
Missouri	57	39	7	71	28	1,109	0	6
North Dakota		5			86	3	0	0
South Dakota	6	26		1	76	12	0	0
Nebraska	11	8		37	14	30	0	1
Kansas	44	28	4	12	79	53	0	2
<b>South Atlantic States</b>								
Delaware	3	4	1	1	2	3	0	0
Maryland	35	25	41	1,226	11	249	3	0
District of Columbia	19	11	1	28	3	25	0	1
Virginia							3	3
West Virginia	42	13	64	150	336	30	0	0
North Carolina	38	33	23	177	137	163	3	3
South Carolina	12	16	389	1,968	20	27	0	0
Georgia	24	33	126	267	9	108	1	2
Florida	10	11	7	42	11	63	0	1

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Jan 23, 1932, 6 cases 1 case in Maryland, 1 case in Georgia, and 4 cases in Alabama.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 23, 1932, and January 24, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan 23, 1932	Week ended Jan. 24, 1931	Week ended Jan. 23, 1932	Week ended Jan. 24, 1931	Week ended Jan. 23, 1932	Week ended Jan. 24, 1931	Week ended Jan. 23, 1932	Week ended Jan. 24, 1931
<b>East South Central States.</b>								
Kentucky.....	76	16	—	14	94	76	0	7
Tennessee.....	31	15	43	187	16	110	4	2
Alabama <sup>1</sup> .....	65	60	95	87	17	458	4	6
Mississippi.....	22	14	—	—	—	—	1	1
<b>West South Central States:</b>								
Arkansas.....	24	14	18	209	2	9	0	8
Louisiana.....	35	21	4	91	4	2	1	1
Oklahoma <sup>4</sup> .....	50	26	73	155	84	74	0	0
Texas.....	80	32	63	102	10	141	1	2
<b>Mountain States:</b>								
Montana.....	6	4	11	—	103	2	0	0
Idaho.....	—	—	—	—	2	—	1	1
Wyoming.....	—	1	—	—	1	2	0	8
Colorado.....	9	9	—	—	6	29	0	0
New Mexico.....	17	4	250	1	8	21	0	0
Arizona.....	2	14	42	22	—	125	0	9
Utah <sup>1</sup> .....	1	3	—	1	2	2	0	1
<b>Pacific States:</b>								
Washington.....	9	25	—	—	443	62	0	2
Oregon.....	5	5	70	56	40	115	0	0
California.....	79	62	235	93	252	546	5	6

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan 23, 1932	Week ended Jan. 24, 1931	Week ended Jan. 23, 1932	Week ended Jan. 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931
<b>New England States:</b>								
Maine.....	0	4	25	36	0	0	1	3
New Hampshire.....	1	0	14	5	1	0	0	0
Vermont.....	0	0	7	2	26	0	1	1
Massachusetts.....	2	3	549	325	20	6	3	0
Rhode Island.....	0	1	36	65	0	0	0	1
Connecticut.....	1	0	87	74	4	0	1	1
<b>Middle Atlantic States</b>								
New York.....	1	0	909	739	4	1	15	6
New Jersey.....	1	0	209	252	0	0	3	1
Pennsylvania.....	3	2	589	560	0	2	26	1
<b>East North Central States.</b>								
Ohio.....	0	1	323	303	34	73	10	8
Indiana.....	0	1	100	391	31	108	0	0
Illinois.....	5	4	398	521	29	51	14	7
Michigan.....	1	1	319	381	16	88	2	4
Wisconsin.....	3	0	111	145	5	4	2	0
<b>West North Central States</b>								
Minnesota.....	1	2	87	4	0	12	0	3
Iowa.....	1	1	64	89	67	46	0	2
Missouri.....	0	2	89	178	23	24	1	5
North Dakota.....	3	2	15	27	1	10	2	0
South Dakota.....	1	1	7	6	17	38	4	2
Nebraska.....	1	3	15	51	5	28	0	5
Kansas.....	0	0	74	68	1	87	4	1
<b>South Atlantic States</b>								
Delaware.....	0	0	8	33	0	0	0	0
Maryland <sup>2</sup> .....	1	1	92	82	0	0	12	3
District of Columbia.....	0	0	21	32	0	0	3	1
Virginia.....	1	2	—	—	—	—	—	—
West Virginia.....	0	0	46	57	4	19	7	12
North Carolina.....	2	1	57	58	1	0	5	1
South Carolina.....	0	1	11	17	2	0	11	4
Georgia <sup>3</sup> .....	1	0	32	68	0	0	6	7
Florida.....	1	0	1	7	0	0	11	2

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Jan. 23, 1932, 6 cases: 1 case in Maryland, 1 case in Georgia, and 4 cases in Alabama.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 23, 1932, and January 24, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931	Week ended Jan 23, 1932	Week ended Jan 24, 1931
<b>East South Central States</b>								
Kentucky	1	0	124	114	8	16	19	9
Tennessee	0	0	62	42	16	5	21	3
Alabama	2	3	30	62	16	6	24	14
Mississippi	1	0	23	25	58	12	6	2
<b>West South Central States:</b>								
Arkansas	0	1	14	35	20	42	6	8
Louisiana	1	1	15	28	4	10	9	2
Oklahoma	0	0	26	34	36	97	2	10
Texas	1	0	98	65	72	31	8	7
<b>Mountain States:</b>								
Montana	0	0	45	59	2	2	3	2
Idaho	0	1	12	20	2	2	0	0
Wyoming	0	1	18	50	0	2	0	0
Colorado	0	0	46	45	4	19	2	1
New Mexico	0	0	9	7	1	2	1	0
Arizona	0	0	5	4	0	14	0	1
Utah	0	0	18	6	0	1	0	1
<b>Pacific States</b>								
Washington	0	1	39	50	32	36	3	2
Oregon	1	1	27	14	20	19	3	0
California	2	7	140	142	21	82	5	6

\* Week ended Friday

\* Typhus fever, week ended Jan 23, 1932, 6 cases. 1 case in Maryland, 1 case in Georgia, and 4 cases in Alabama

\* Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week

State	Menin- gococ- cus menin- gitis	Diph- theria	Influenza	Ma- laria	Meas- les	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1931</i>										
Colorado	4	22					1	129		26
Kansas	1	311	1	1	102		1	282	31	12
<i>December, 1931</i>										
Alabama	6	263	83	87	73	54	11	207	2	72
Arkansas	2	132	49	39	49	13	0	103	40	41
Idaho	1	7	14		5		0	63	23	4
Illinois	25	603	104	23	168	2	42	1,378	88	82
Indiana	39	325	71	4	121		3	406	36	29
Maryland	5	288	94		38		2	420	0	44
Minnesota	7	121	6		71		26	260	35	15
Missouri	16	411	25	10	37	1	3	381	38	24
New Jersey	7	153	51		126		9	591		13
North Carolina	9	360	88		187	114	5	394	2	25
Pennsylvania	24	544		1	2,791	1	22	1,914	1	92
Porto Rico		68	80	9,859	126	3	2		0	15
Rhode Island		27	18		2,249			142	0	0
West Virginia	5	188	46		1,085		8	179	10	72

November, 1931		Cases	Mumps:		Cases
<b>Colorado:</b>			<b>Alabama</b>		<b>26</b>
Paratyphoid fever	.....	1	Arkansas	.....	27
<b>Kansas:</b>			Idaho	.....	35
Chicken pox	.....	352	Illinois	.....	133
German measles	.....	3	Indiana	.....	176
Impetigo contagiosa	.....	6	Maryland	.....	186
Mumps	.....	98	Missouri	.....	22
Paratyphoid fever	.....	2	New Jersey	.....	166
Scabies	.....	4	Pennsylvania	.....	1,484
Septic sore throat	.....	2	Porto Rico	.....	10
Tetanus	.....	2	Rhode Island	.....	128
Trench mouth	.....	1	<b>Ophthalmia neonatorum:</b>		
Tularaemia	.....	7	Alabama	.....	1
Undulant fever	.....	7	Illinois	.....	7
Vincent's angina	.....	9	Maryland	.....	4
Whooping cough	.....	113	Minnesota	.....	1
			Missouri	.....	2
			Pennsylvania	.....	18
			Porto Rico	.....	20
			Rhode Island	.....	1
			<b>Paratyphoid fever:</b>		
			Idaho	.....	1
			Illinois	.....	2
			New Jersey	.....	1
			North Carolina	.....	1
			Porto Rico	.....	5
			Rhode Island	.....	1
			<b>Puerperal septicemia:</b>		
			Illinois	.....	20
			Pennsylvania	.....	19
			Porto Rico	.....	4
			<b>Rabies in animals</b>		
			Illinois	.....	3
			Maryland	.....	3
			Missouri	.....	2
			Rhode Island	.....	1
			<b>Rabies in man</b>		
			Illinois	.....	2
			<b>Scabies</b>		
			Maryland	.....	10
			<b>Septic sore throat</b>		
			Illinois	.....	32
			Maryland	.....	4
			Missouri	.....	22
			North Carolina	.....	12
			Rhode Island	.....	3
			<b>Tetanus</b>		
			Illinois	.....	14
			Maryland	.....	1
			New Jersey	.....	1
			Pennsylvania	.....	1
			Porto Rico	.....	2
			<b>Tetanus, infantile</b>		
			Porto Rico	.....	4
			<b>Trachoma</b>		
			Arkansas	.....	1
			Illinois	.....	10
			Indiana	.....	1
			Missouri	.....	29
			New Jersey	.....	4
			Pennsylvania	.....	4
			Porto Rico	.....	11
			<b>Trichinosis</b>		
			New Jersey	.....	1
<b>December, 1931</b>					
<b>Chicken pox:</b>					
Alabama	.....	133			
Arkansas	.....	52			
Idaho	.....	130			
Illinois	.....	1,474			
Indiana	.....	598			
Maryland	.....	274			
Minnesota	.....	470			
Missouri	.....	382			
New Jersey	.....	759			
North Carolina	.....	508			
Pennsylvania	.....	3,527			
Porto Rico	.....	8			
Rhode Island	.....	78			
West Virginia	.....	255			
<b>Diarrhea</b>					
Maryland	.....	10			
<b>Dysentery:</b>					
Illinois	.....	8			
Illinois (amoebic)	.....	4			
Maryland	.....	8			
Minnesota	.....	3			
Minnesota (amoebic)	.....	2			
Missouri	.....	1			
New Jersey	.....	1			
Pennsylvania	.....	1			
Porto Rico	.....	67			
<b>Filariasis</b>					
Porto Rico	.....	23			
<b>German measles:</b>					
Illinois	.....	21			
Maryland	.....	1			
New Jersey	.....	31			
North Carolina	.....	13			
Pennsylvania	.....	159			
Rhode Island	.....	11			
<b>Impetigo contagiosa</b>					
Maryland	.....	30			
<b>Lead poisoning</b>					
Illinois	.....	5			
New Jersey	.....	2			
<b>Lethargic encephalitis</b>					
Alabama	.....	3			
Illinois	.....	7			
Maryland	.....	1			
Pennsylvania	.....	4			

Tularaemia:		Cases	Vincent's angina:		Cases
Alabama	-----	1	Illinois	-----	27
Arkansas	-----	1	Maryland	-----	12
Illinois	-----	54	Whooping cough:		
Indiana	-----	11	Alabama	-----	19
Maryland	-----	9	Arkansas	-----	22
Minnesota	-----	3	Illinois	-----	1,250
Missouri	-----	13	Indiana	-----	208
New Jersey	-----	1	Maryland	-----	637
Pennsylvania	-----	3	Minnesota	-----	96
Typhus fever			Missouri	-----	446
Alabama	-----	11	New Jersey	-----	738
North Carolina	-----	1	North Carolina	-----	552
Undulant fever:			Pennsylvania	-----	1,984
Alabama	-----	4	Porto Rico	-----	506
Illinois	-----	3	Rhode Island	-----	23
Indiana	-----	1	West Virginia	-----	111
Maryland	-----	3	Yaws:		
Minnesota	-----	2	Porto Rico	-----	9
Missouri	-----	6			
New Jersey	-----	2			
Pennsylvania	-----	6			

*Cases of certain communicable diseases reported for the month of November, 1931  
by State health officers*

State	Chick en pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small pox	Tuber- culosis	Ty- phoid and para- ty- phoid fever	Whoop- ing cough
Maine	193	17	762	10	139	0	40	16	80
New Hampshire		21			23	0		1	
Vermont	273	30	141	51	58	75	15	0	277
Massachusetts	488	243	390	627	96	0	137	15	474
Rhode Island	70	31	571	38	71	0	53	0	19
Connecticut	203	17	69	118	167	0	89	18	148
New York	1,434	419	804	398	1,787	70	1,471	100	1,109
New Jersey	324	134	122	87	499	1	384	21	611
Pennsylvania	2,704	08	1,352	1,108	1,603	0	607	212	1,743
Ohio	1,836	568	234	547	2,003	55	334	136	1,321
Indiana	108	361	138	63	415	31	222	27	137
Illinois	1,077	896	210	133	1,176	71	620	87	1,158
Michigan	763	210	328	310	787	64	257	48	694
Wisconsin	1,172	95	101	518	294	29	111	16	667
Minnesota	373	114	72		197	10	180	12	38
Iowa	343	83	13	14	201	27	33	16	111
Missouri	246	112	80	19	165	9	217	66	440
North Dakota	125	16	7	33	79	73	6	20	22
South Dakota	120	39	216	33	61	44	11	11	33
Nebraska	165	93	42	43	108	29	19	5	52
Kansas	302	31	102	18	282	31	68	14	113
Delaware	13	141	2	5	26	0	23	3	28
Maryland	250	289	21	123	132	0	147	94	390
District of Columbia	22	10	9		92	0	84	14	67
Virginia	419	1,335	211		729	6	126	130	738
West Virginia	283	228	130		249	2	65	152	213
North Carolina	389	691	184		714	4		64	536
South Carolina	84	340	38	58	62	1	113	43	72
Georgia	61	179	25	20	149		105	80	35
Florida	12	89	35	13	24	2	37	12	5
Kentucky	73	521	26	20	345	20	156	117	277
Tennessee	67	397	26	22	247	2	295	89	61
Alabama									
Mississippi	238	391	27	45	154	44	75	40	302

<sup>1</sup> Reports received weekly.

*Cases of certain communicable diseases reported for the month of November, 1931,  
by State health officers—Continued*

State	Chick- en pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- ty- phoid fever	Whoop- ing cough
Arkansas.....	34	234	35	7	137	11	<sup>1</sup> 10	50	55
Louisiana.....	12	243	28	3	148	14	<sup>1</sup> 177	97	19
Oklahoma <sup>1</sup> .....	46	431	8	30	102	23	38	107	25
Texas.....		364			183			48	
Montana.....	174	18	571	4	127	6	53	11	60
Idaho.....	87	20		72	46	3	<sup>1</sup> 8	3	
Wyoming.....	31		6	20	31	2		1	18
Colorado.....		22			129			27	
New Mexico.....	118	78	9	17	51		38	37	2
Arizona.....	99	73	5	10	26	2	88	9	14
Utah <sup>1</sup> .....									
Nevada.....	2				5	0	<sup>1</sup> 1	0	11
Washington.....	442	50	135	97	235	58	179	22	62
Oregon.....	253	8	26	56	71	36	43	13	27
California.....	1,031	456	574	409	579	28	707	58	351

<sup>1</sup> Reports received weekly.<sup>1</sup> Pulmonary.<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

*Case rates per 100,000 population (annual basis) for the month of November, 1931*

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Maine.....	293	26	1,188	15	211	0	61	24	122
New Hampshire.....		55			60	0		3	
Vermont.....	854	101	476	179	196	253	51		335
Massachusetts.....	138	69	110	177	256	0	124	4	134
Rhode Island.....	122	59	996	66	124	0	92		33
Connecticut.....	153	13	74	88	124	0	66	13	110
New York.....	136	40	86	38	169	7	139	9	105
New Jersey.....	154	39	36	26	146	0	113	6	188
Pennsylvania.....	313	63	169	138	200	0	76	30	218
Ohio.....	331	102	42	99	361	10	60	24	238
Indiana.....	152	134	51	23	154	12	82	10	51
Illinois.....	169	92	33	21	184	11	97	14	181
Michigan.....	186	51	80	76	192	16	63	12	169
Wisconsin.....	479	39	41	212	120	12	45	7	273
Minnesota.....	166	54	34		93	5	85	6	18
Iowa.....	178	41	6	7	99	127	16	8	54
Missouri.....	82	137	27	6	155	3	72	22	146
North Dakota.....	224	28	12	59	140	130	14	30	39
South Dakota.....	209	68	376	57	106	77	19	19	57
Nebraska.....	145	82	37	38	95	25	17	4	46
Kansas.....	226	200	66	63	181	20	44	9	73
Delaware.....	66	729	10	25	182	0	116	15	142
Maryland.....	184	213	15	90	318	0	108	69	441
District of Columbia.....	54	148	22		227	0	207	35	165
Virginia.....	209	667	105		364	3	63	65	369
West Virginia.....	195	157	501		172	1	45	105	147
North Carolina.....	146	259	69		268	1		24	201
South Carolina.....	59	237	26	40	43	1	79	30	50
Georgia.....	26	75	10	8	62	0	44	33	15
Florida.....	10	71	28	10	19	2	29	10	4
Kentucky <sup>1</sup> .....									
Tennessee.....	34	241	12	13	158	9	72	54	127
Alabama.....	30	180	12	10	112	1	134	40	28
Mississippi.....	142	234	16	27	92	26	45	24	180

<sup>1</sup> Reports received weekly.

*Case rates per 100,000 population (annual basis) for the month of November, 1931—Continued*

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Arkansas.....	22	152	23	5	80	7	<sup>1</sup> 7	33	36
Louisiana.....	7	138	16	2	84	8	<sup>2</sup> 101	55	11
Oklahoma <sup>3</sup> .....	27	250	5	17	112	13	22	62	15
Texas.....		74			37			10	
Montana.....	294	41	1,292	9	287	14	120	25	136
Idaho.....	217	54		196	125	8	<sup>2</sup> 22	8	
Wyoming.....	161		32	106	164	11		5	95
Colorado.....		26			150			31	
New Mexico.....	333	220	25	48	144	1	107	104	6
Arizona.....	260	198	14	27	71	5	249	24	38
Utah <sup>1</sup> .....									
Nevada.....	26				66	0	<sup>2</sup> 13		144
Washington.....	339	38	103	74	180	44	137	17	47
Oregon.....	316	10	32	70	89	45	54	16	34
California.....	211	93	117	84	118	6	145	12	72

<sup>1</sup> Reports received weekly<sup>2</sup> Pulmonary<sup>3</sup> Exclusive of Oklahoma City and Tulsa

**PATIENTS IN INSTITUTIONS FOR THE CARE OF EPILEPTICS, JANUARY TO MARCH, 1930**

Reports for the first quarter of the year 1930 were received by the Public Health Service from 13 institutions for the care and treatment of epileptics, located in 13 States. The total number of patients, including those on parole or otherwise absent, but still on the books, on March 31, 1930, was 8,677

The first admissions were as follows:

Month	Male	Female	Total
January, 1930.....	62	35	97
February, 1930.....	76	41	117
March, 1930.....	65	44	109
Total.....	203	120	323

Of the new admissions during the three months, 62.8 per cent were males and 37.2 per cent were females, giving a ratio of 169 males per 100 females.

During the quarter 120 patients were discharged—71 males and 49 females. Seventy-four male patients and 76 female patients died. The annual death rates, based on the total number of patients of the institutions on March 31, 1930, were: Males, 65.1 per 1,000; females, 75.8 per 1,000; persons, 70.1 per 1,000.

At the end of March there were 4,613 males and 4,064 females on the rolls of the institutions, giving a ratio of 114 males per 100 females



The following table shows for the 13 institutions the numbers of patients in the hospitals and on parole on January 1, 1930, and at the end of each month of the first quarter of the year:

	Jan. 1, 1930	Jan. 31, 1930	Feb. 28, 1930	Mar. 31, 1930
<b>Patients in hospitals:</b>				
Male.....	4, 196	4, 321	4, 361	4, 375
Female.....	3, 827	3, 867	3, 897	3, 909
Total.....	8, 023	8, 188	8, 258	8, 284
<b>Patients on parole:</b>				
Male.....	325	227	220	238
Female.....	215	109	151	165
Total.....	540	396	371	393
<b>Total patients on books:</b>				
Male.....	4, 521	4, 548	4, 581	4, 613
Female.....	4, 042	4, 036	4, 048	4, 064
Total.....	8, 563	8, 584	8, 629	8, 677
<b>Per cent of total patients on parole:</b>				
Male.....	7.2	5.0	4.8	5.2
Female.....	5.3	4.2	3.7	3.8
Total.....	6.3	4.6	4.3	4.5

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 92 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,460,000. The estimated population of the 85 cities reporting deaths is more than 31,903,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended January 16, 1932, and January 17, 1931*

	1932	1931	Estimated expectancy
<b>CASES REPORTED</b>			
<b>Diphtheria:</b>			
46 States.....	1, 740	1, 331	-----
92 cities.....	561	465	889
<b>Measles:</b>			
45 States.....	5, 739	5, 959	-----
92 cities.....	1, 786	2, 050	-----
<b>Meningococcus meningitis:</b>			
46 States.....	70	144	-----
92 cities.....	31	68	-----
<b>Poliomyelitis:</b>			
46 States.....	38	69	-----
<b>Scarlet fever</b>			
46 States.....	5, 243	5, 265	-----
92 cities.....	2, 031	1, 968	1, 411
<b>Smallpox:</b>			
46 States.....	550	1, 375	-----
92 cities.....	22	100	43
<b>Typhoid fever</b>			
46 States.....	237	150	-----
92 cities.....	29	21	28
<b>DEATHS REPORTED</b>			
<b>Influenza and pneumonia:</b>			
85 cities.....	851	1, 530	-----
<b>Smallpox:</b>			
85 cities.....	0	1	-----
Omaha, Nebr.....	0	1	-----

## City reports for week ended January 16, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths, reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	11	0	2	1	0	134	0	7
New Hampshire:								
Concord	0	0	0		0	0	0	1
Manchester	0	0	0		0	0	0	3
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre		0						
Burlington	0	0	0		0	44	0	0
Massachusetts:								
Boston	84	35	17	8	5	8	19	12
Fall River	7	4	2	2	1	1	0	2
Springfield	12	5	0		0	5	22	3
Worcester	9	5	3		0	3	81	6
Rhode Island:								
Pawtucket	0	2	0		0	0	0	0
Providence	10	7	9		0	642	0	3
Connecticut:								
Bridgeport	1	0	0	1	1	1	0	3
Hartford	4	0	3	1	0	1	42	3
New Haven	24	1	0		0	0	27	3
MIDDLE ATLANTIC								
New York:								
Buffalo	38	12	1	1	2	13	0	28
New York	210	199	157	28	14	33	72	176
Rochester	8	6	1		0	57	24	3
Syracuse	25	2	0		0	9	11	7
New Jersey:								
Camden	8	8	7	1	1	1	1	3
Newark	59	17	4	5	0	1	37	13
Trenton	3	2	2		0	1	7	5
Pennsylvania:								
Philadelphia	128	64	5	9	5	7	20	46
Pittsburgh	53	19	9	1	4	139	43	12
Reading	23	1	0		0	2	0	8
Scranton	5		0		0	1	1	
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	10	9	5	1	2	0	0	9
Cleveland	184	30	13	26	0	178	110	20
Columbus	22	4	6		0	2	0	3
Toledo	53	7	0	2	2	2	1	4
Indiana:								
Fort Wayne		4					63	11
Indianapolis	36	7	1		0	1	0	0
South Bend	5	1	0		0	0	0	3
Terre Haute	1	1	0		0	0	0	0
Illinois:								
Chicago	112	104	48	62	2	46	3	45
Peoria	7		1		0	0	0	5
Springfield	4	0	2		0	0	4	1

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL—continued								
Michigan:								
Detroit.....	68	53	33	1	3	9	17	29
Flint.....	19	3	1		1	7	74	3
Grand Rapids.....	10	1	0		1	42	4	0
Wisconsin:								
Kenosha.....	9	0	0		0	0	1	0
Milwaukee.....	101	16	4		0	17	62	12
Racine.....	32	3	0		0	1	54	0
Superior.....	3	0	0		0	0	13	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	19	0	0		0	0	0	1
Minneapolis.....	41	16	5		1	3	47	7
St. Paul.....	13	5	0		0	1	2	6
Iowa:								
Davenport.....	2	1	2			0	1	
Des Moines.....	0	2	1			0	0	
Sioux City.....	4	1	4			0	0	
Waterloo.....	4	0	0			1	0	
Missouri:								
Kansas City.....	35	6	14		0	2	1	1
St. Joseph.....	6	1	1		0	0	0	4
St. Louis.....	15	41	12		0	1	2	11
North Dakota:								
Fargo.....	4	0	0		0	26	0	6
Grand Forks.....	0	0	0			0	0	
South Dakota:								
Aberdeen.....	7	0	0			16	0	
Nebraska:								
Omaha.....	11	4	4		0	0	2	7
Kansas:								
Topeka.....	6	2	6		0	1	2	0
Wichita.....	39	2	10		0	0	0	4
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	2	2	0		0	0	1	3
Maryland:								
Baltimore.....	65	22	13	6	2	4	56	23
Cumberland.....	0	0	0		0	0	0	1
Frederick.....	1	0	2		0	1	0	0
District of Columbia:								
Washington.....	12	17	13		0	1	0	24
Virginia:								
Lynchburg.....	1	1	0		0	2	0	3
Norfolk.....	3	2	1		0	0	3	3
Richmond.....	0	6	6		1	1	0	4
Roanoke.....	3	2	4		1	1	0	1
West Virginia:								
Charleston.....	7	1	1		0	6	0	1
Huntington.....	0		2			1	0	
Wheeling.....	2	1	0		0	1	0	6
North Carolina:								
Raleigh.....	1	1	1		0		0	1
Wilmington.....	1	1	2		0	0	0	1
Winston-Salem.....	44	1			0		1	
South Carolina:								
Charleston.....	1	1	1	16	0	0	0	3
Columbia.....	0	0	0		0	0	0	0
Greenville.....	3	0	0			0	0	
Georgia:								
Atlanta.....	5	4	3	28	0	0	0	17
Brunswick.....	0	0	0		0	0	0	0
Savannah.....		3						
Florida:								
Miami.....	0	2	3	1	0	0	0	1
Tampa.....	0	1	0		0	1	0	1

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....		1						
Lexington.....	2		1	1	0	1	12	1
Tennessee:								
Memphis.....		4						
Nashville.....	2	1	3		1	0	0	3
Alabama:								
Birmingham.....	4	5	5	3	1	0	5	7
Mobile.....	0	1	1	1	1	0	0	5
Montgomery.....	1	1	0	2		1	14	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	1			0	0	
Little Rock.....	0	1	1		1	2	0	6
Louisiana:								
New Orleans.....	0	13	17	6	4	0	0	9
Shreveport.....	3	1	3	3	0	18	1	4
Oklahoma:								
Muskogee.....	4		3			0	1	
Tulsa.....	3	2	4			1	1	
Texas:								
Dallas.....	5	9	12		0	1	0	7
Fort Worth.....	5	7	9		0	2	0	4
Galveston.....	0	1	6		1	0	0	1
Houston.....	0	8	16		1	0	1	3
San Antonio.....	1	3	3		2	1	0	14
MOUNTAIN								
Montana:								
Billings.....	0	0	0		0	3	0	0
Great Falls.....	5	0	0		0	1	0	2
Helena.....	0	0	0		0	52	0	0
Missoula.....	0	0	0		0	0	0	1
Idaho:								
Boise.....	0	0	0		0	0	1	0
Colorado:								
Denver.....	14	8	5		9	4	10	15
Pueblo.....	15	1	0		1	0	0	0
New Mexico:								
Albuquerque.....	3	0	2		0	0	0	1
Arizona:								
Phoenix.....	0		1		0	0	0	3
Utah:								
Salt Lake City.....	37	3	0		2	0	1	1
Nevada:								
Reno.....	0	0	0		0	0	0	2
PACIFIC								
Washington:								
Seattle.....	63	4	0			161	17	
Spokane.....	17	1	0			2	0	
Tacoma.....	5	3	1		0	1	3	5
Oregon:								
Portland.....	26	8	1	1	0	1	6	6
Salem.....	5	0	0	3	0	0	3	2
California:								
Los Angeles.....	86	36	45	108	5	0	6	43
Sacramento.....	13	3	1	1	1	89	0	13
San Francisco.....	49	14	4	14	5	33	1	7

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	3	1	0	0	0	0	1	0	0	6	32
New Hampshire:											
Concord.....	0	4	0	0	0	0	0	0	0	0	5
Manchester....	2	2	0	0	0	0	0	0	0	0	18
Nashua.....	0	1	0	0	0	0	0	0	0	1	-----
Vermont:											
Barre.....	0	-----	0	-----	-----	0	-----	-----	-----	-----	-----
Burlington....	1	2	-----	2	0	1	0	0	0	0	11
Massachusetts:											
Boston.....	92	152	0	1	0	22	0	0	0	32	242
Fall River....	4	2	0	0	0	0	1	0	0	0	32
Springfield...	9	5	0	0	0	0	0	0	0	8	30
Worcester....	14	36	0	0	0	2	0	0	0	15	46
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	17
Providence....	16	23	0	0	0	3	1	0	0	21	56
Connecticut:											
Bridgeport....	10	4	0	0	0	3	0	0	0	5	38
Hartford.....	8	8	0	0	0	0	0	0	0	31	42
New Haven....	6	8	0	0	0	2	0	0	1	3	47
MIDDLE ATLANTIC											
New York:											
Buffalo.....	27	76	0	0	0	8	0	0	0	35	142
New York.....	227	404	0	0	0	101	7	6	0	151	1,499
Rochester....	10	56	0	0	0	2	0	2	0	5	84
Syracuse.....	13	26	0	0	0	1	0	0	0	102	54
New Jersey:											
Camden.....	6	50	0	0	0	1	1	0	0	6	39
Newark.....	25	19	0	0	0	15	0	1	0	58	101
Trenton.....	5	8	0	0	0	1	0	0	0	1	23
Pennsylvania:											
Philadelphia..	97	150	0	0	0	24	2	1	0	276	451
Pittsburgh....	36	65	0	0	0	7	0	0	0	43	157
Reading.....	4	4	0	0	0	0	0	0	0	14	37
Scranton.....	-----	15	-----	-----	-----	-----	-----	-----	-----	9	-----
EAST NORTH CEN- TRAL											
Ohio:											
Cincinnati....	22	50	0	0	0	11	0	0	0	8	131
Cleveland....	44	61	0	0	0	20	1	2	0	172	192
Columbus.....	12	13	1	0	0	3	0	0	0	23	82
Toledo.....	14	7	2	0	0	8	0	0	0	62	66
Indiana:											
Fort Wayne....	5	-----	0	-----	-----	-----	0	-----	-----	-----	-----
Indianapolis..	12	4	5	1	0	2	0	0	0	12	-----
South Bend....	3	6	1	0	0	3	0	0	0	5	19
Terre Haute...	2	0	0	0	0	0	0	0	0	1	25
Illinois:											
Chicago.....	127	191	1	1	0	37	1	0	0	156	633
Peoria.....	-----	6	-----	0	0	0	-----	0	0	19	31
Springfield...	3	10	0	0	0	0	0	0	0	5	24
Michigan:											
Detroit.....	108	151	2	0	0	22	0	1	0	113	270
Flint.....	13	15	1	0	0	0	0	0	0	13	13
Grand Rapids..	13	10	0	0	0	1	0	0	0	2	86
Wisconsin:											
Kenosha.....	2	4	1	0	0	6	0	0	0	5	7
Milwaukee....	35	35	0	0	0	6	1	0	0	123	101
Racine.....	5	3	0	0	0	1	0	0	0	2	1
Superior.....	8	1	0	0	0	0	0	0	0	0	-----

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth .....	11	4	0	0	0	1	0	0	0	3	15
Minneapolis .....	47	34	1	0	0	1	1	0	0	7	83
St. Paul .....	29	14	1	0	0	3	0	0	0	7	54
Iowa:											
Davenport .....	3	11	1	0			0	0		0	
Des Moines .....	8	6	2	1			0	0		0	33
Sioux City .....	3	0	0	6			0	0		3	
Waterloo .....	2	1	1	0			0	0		8	
Missouri:											
Kansas City .....	18	25	0	0	0	4	0	0	0	44	91
St. Joseph .....	3	0	1	0	0	0	0	0	0	0	27
St. Louis .....	44	25	1	1	0	13	1	0	0	69	288
North Dakota:											
Fargo .....	3	5	0	0	0	1	0	1	0	0	4
Grand Forks .....	0	0	0	0			0	0		0	
South Dakota											
Aberdeen .....	1	1	0	0			0	0		3	
Nebraska:											
Omaha .....	7	7	2	2	0	1	0	0	0	6	58
Kansas:											
Topeka .....	3	0	0	0	0	0	0	0	0	12	15
Wichita .....	5	1	1	0	0	0	0	0	0	5	35
SOUTH ATLANTIC											
Delaware											
Wilmington .....	6	5	0	0	0	1	0	0	0	2	32
Maryland											
Baltimore .....	34	45	0	0	0	14	2	1	0	144	230
Cumberland .....	1	4	0	0	0	0	0	0	0	3	8
Frederick .....	0	2	0	0	0	0	0	0	0	3	4
District of Col											
Washington .....	26	23	0	0	0	9	0	2	0	15	167
Virginia:											
Lynchburg .....	1	2	0	0	0	0	0	0	0	3	12
Norfolk .....	3	6	0	0	0	1	0	0	0	0	
Richmond .....	7	23	0	0	0	3	0	0	0	4	51
Roanoke .....	4	1	0	0	0	0	1	0	0	0	17
West Virginia											
Charleston .....	1	1	0	0	0	1	0	0	0	4	19
Huntington .....		0	0	0			0	0		0	0
Wheeling .....	3	1	0	0	0	0	1	0	0	6	26
North Carolina:											
Raleigh .....	1		1				0				
Wilmington .....	1	0	0	0	0	0	0	0	0	17	9
Winston-Salem .....	2	7	1	0	0	1	0	0	0	13	16
South Carolina:											
Charleston .....	1	0	0	0	0	0	0	1	1	1	14
Columbia .....	0	1	0	0	0	0	0	0	0	0	
Greenville .....		0	1	2				0		1	
Georgia:											
Atlanta .....	6	5	1	0	0	2	0	1	1	2	77
Brunswick .....	0	0	0	0	0	0	0	0	0	0	2
Savannah .....	1		0				0				
Florida:											
Miami .....	3	0	0	0	0	5	0	0	0	0	31
Tampa .....	1	0	0	0	0	2	0	2	0	0	27
EAST SOUTH CENTRAL											
Kentucky:											
Covington .....	2		0				0				
Lexington .....		0		0	0	1		0	0	6	11
Tennessee:											
Memphis .....	8		1				1				
Nashville .....	3	0	0	0	0	0	0	0	1	10	34
Alabama:											
Birmingham .....	5	8	1	0	0	2	0	4	0	2	61
Mobile .....	1	1	0	0	0	0	0	0	0	0	21
Montgomery .....	1	3	0	0			0	0		4	

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	0	0	0			0	0		3	
Little Rock.....	1	2	0	0	0	1	0	0	0	1	
Louisiana:											
New Orleans.....	7	9	0	3	0	13	3	2	1	2	187
Shreveport.....	1	1	1	0	0	2	0	0	1	4	28
Oklahoma:											
Muskogee.....		0		0				0		4	
Tulsa.....	2	5		1			0	0		2	
Texas:											
Dallas.....	7	11	1	0	0	0	1	1	1	1	59
Fort Worth.....	3	11	2	2	0	1	0	1	0	0	39
Galveston.....	1	0	0	0	0	4	0	0	0	0	16
Houston.....	2	7	3	2	0	7	0	0	1	0	76
San Antonio.....	2	0	0	0	0	4	0	0	1	0	88
MOUNTAIN											
Montana:											
Billings.....	2	0	0	0	0	0	0	0	0	0	5
Great Falls.....	5	0	0	0	0	0	0	0	0	0	10
Helena.....	1	0	0	0	0	0	0	0	0	0	5
Missoula.....	1	4	0	0	0	0	0	0	0	0	9
Idaho:											
Boise.....	1	1	1	0	0	0	0	0	0	0	9
Colorado:											
Denver.....	13	23	1	0	0	7	0	0	0	2	80
Pueblo.....	1	0	0	1	0	1	0	1	0	1	12
New Mexico:											
Albuquerque.....	1	1	0	0	0	4	0	2	0	0	15
Arizona:											
Phoenix.....	0	1	1	0	0	1	0	0	0	1	
Utah:											
Salt Lake City.....	5	2	0	0	0	0	0	0	0	1	41
Nevada:											
Reno.....	1	0	0	0	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle.....	10	5	2	0			0	0		7	
Spokane.....	3	1	3	0			0	0		0	
Tacoma.....	3	6	2	0	0	0	0	0	0	0	22
Oregon:											
Portland.....	6	4	7	12	0	4	0	0	0	3	85
Salem.....	0	0		0	0	1		0	0	1	12
California:											
Los Angeles.....	40	48	3	3	0	16	1	0	0	10	326
Sacramento.....	3	0	1	0	0	2	0	0	0	0	44
San Francisco.....	19	8	2	1	0	12	1	0	0	0	168

## City reports for week ended January 16, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated, expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Maine:									
Portland .....	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston .....	0	0	0	0	0	0	1	1	0
Worcester .....	0	0	0	0	0	0	0	1	0
Connecticut:									
Hartford .....	1	0	0	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo .....	2	0	0	0	0	0	0	0	0
New York 1 .....	5	2	2	2	0	0	1	1	0
Pennsylvania:									
Philadelphia .....	1	0	1	1	0	0	0	0	0
Pittsburgh .....	2	0	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Indiana:									
Indianapolis .....	7	2	0	0	0	0	0	0	0
South Bend .....	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago .....	2	1	0	0	0	0	1	1	0
Michigan:									
Detroit .....	4	1	0	1	0	0	0	0	0
Flint .....	2	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore .....	0	0	1	0	0	0	0	0	0
South Carolina:									
Charleston 2 .....	0	0	0	0	2	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Nashville .....	2	0	0	0	0	0	0	0	0
Alabama:									
Birmingham .....	0	0	0	0	1	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans .....	2	2	0	0	0	0	0	0	0
Texas 1:									
Dallas .....	0	1	0	0	0	0	0	1	0
Houston .....	0	1	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Arizona:									
Phoenix .....	0	1	0	0	0	0	-----	0	0
<b>PACIFIC</b>									
California:									
Los Angeles .....	0	1	0	0	0	0	0	0	0
San Francisco .....	1	1	0	0	0	0	0	0	0

1 Typhus fever. 1 death at New York City, N. Y.

2 Dengue: 3 cases at Charleston, S. C., and 2 deaths at San Antonio, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended January 16, 1932, compared with those for a like period ended January 17, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.



*Summary of weekly reports from cities, December 13, 1931, to January 16, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931
98 cities.....	103	<sup>1</sup> 94	72	71	<sup>1</sup> 72	80	<sup>1</sup> 83	81	<sup>1</sup> 88	74
New England.....	84	143	65	75	84	116	79	79	<sup>1</sup> 87	91
Middle Atlantic.....	71	62	57	47	56	68	50	63	<sup>1</sup> 82	86
East North Central.....	104	116	69	102	64	91	76	96	<sup>1</sup> 68	95
West North Central.....	187	89	134	54	130	83	131	98	106	82
South Atlantic.....	118	108	99	86	71	62	114	85	<sup>1</sup> 95	69
East South Central.....	157	84	111	84	<sup>1</sup> 107	72	162	117	<sup>10</sup> 82	70
West South Central.....	189	<sup>1</sup> 202	115	143	129	136	204	142	195	108
Mountain.....	96	18	26	62	44	62	<sup>1</sup> 136	35	43	52
Pacific.....	82	83	41	40	<sup>11</sup> 64	55	65	61	97	47

## MEASLES CASE RATES

	128	<sup>1</sup> 194	126	181	<sup>1</sup> 192	281	<sup>1</sup> 301	351	<sup>1</sup> 270	324
98 cities.....	128	<sup>1</sup> 194	126	181	<sup>1</sup> 192	281	<sup>1</sup> 301	351	<sup>1</sup> 270	324
New England.....	637	271	945	305	1,207	268	1,706	490	<sup>1</sup> 1,016	310
Middle Atlantic.....	79	87	66	70	93	101	146	178	116	158
East North Central.....	60	28	32	27	93	55	142	62	<sup>1</sup> 182	87
West North Central.....	25	1,416	50	1,277	38	1,894	157	2,156	78	1,829
South Atlantic.....	23	138	14	124	79	322	53	435	<sup>1</sup> 35	600
East South Central.....	52	275	17	323	<sup>1</sup> 31	921	17	809	<sup>10</sup> 9	1,004
West South Central.....	44	<sup>1</sup> 18	41	24	64	24	43	20	73	7
Mountain.....	740	167	339	229	513	317	<sup>1</sup> 1,530	225	517	374
Pacific.....	204	6	259	16	<sup>11</sup> 445	24	784	33	544	55

## SCARLET FEVER CASE RATES

	214	<sup>1</sup> 234	187	222	<sup>1</sup> 226	231	<sup>1</sup> 274	277	<sup>1</sup> 317	316
98 cities.....	214	<sup>1</sup> 234	187	222	<sup>1</sup> 226	231	<sup>1</sup> 274	277	<sup>1</sup> 317	316
New England.....	438	351	380	353	530	327	549	433	<sup>1</sup> 586	630
Middle Atlantic.....	202	208	205	190	240	229	286	242	380	282
East North Central.....	264	306	227	285	233	261	298	345	<sup>1</sup> 335	398
West North Central.....	138	279	126	246	115	238	229	207	220	321
South Atlantic.....	201	208	107	178	221	262	227	277	<sup>1</sup> 247	305
East South Central.....	157	197	157	341	<sup>1</sup> 119	299	225	369	<sup>10</sup> 109	470
West South Central.....	101	<sup>1</sup> 73	41	59	108	108	69	68	96	129
Mountain.....	261	300	113	379	209	220	<sup>1</sup> 351	322	259	331
Pacific.....	94	83	61	85	<sup>11</sup> 109	73	141	73	129	78

## SMALLPOX CASE RATES

	5	<sup>1</sup> 9	4	7	<sup>1</sup> 3	7	<sup>1</sup> 6	13	<sup>1</sup> 3	16
98 cities.....	5	<sup>1</sup> 9	4	7	<sup>1</sup> 3	7	<sup>1</sup> 6	13	<sup>1</sup> 3	16
New England.....	55	0	14	0	12	0	26	0	<sup>1</sup> 2	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	4	6	4	2	7	5	1	15	1	10
West North Central.....	4	48	10	43	4	46	6	63	17	98
South Atlantic.....	0	0	0	0	0	0	0	2	<sup>1</sup> 0	0
East South Central.....	0	0	0	0	<sup>1</sup> 0	0	23	6	<sup>10</sup> 0	18
West South Central.....	3	<sup>1</sup> 15	7	17	0	17	26	87	16	37
Mountain.....	0	115	0	35	9	9	<sup>1</sup> 11	9	9	78
Pacific.....	2	10	8	20	<sup>11</sup> 6	10	19	18	8	29

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Shreveport, La., not included.

<sup>3</sup> Covington, Ky., and Spokane, Wash., not included.

<sup>4</sup> Salt Lake City, Utah, not included.

<sup>5</sup> Barre, Vt.; Fort Wayne, Ind.; Raleigh, N. C.; Savannah, Ga.; Covington, Ky.; and Memphis, Tenn., not included.

<sup>6</sup> Barre, Vt., not included.

<sup>7</sup> Fort Wayne, Ind., not included.

<sup>8</sup> Raleigh, N. C., and Savannah, Ga., not included.

<sup>9</sup> Covington, Ky., not included.

<sup>10</sup> Covington, Ky., and Memphis, Tenn., not included.

<sup>11</sup> Spokane, Wash., not included.

*Summary of weekly reports from cities, December 13, 1931, to January 16, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31—Continued.*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931
98 cities .....	5	* 8	6	7	* 5	5	* 4	4	5	5
New England .....	7	10	2	2	12	2	2	5	* 0	0
Middle Atlantic .....	5	3	4	3	3	4	5	2	4	2
East North Central .....	1	9	2	12	4	4	2	2	* 2	2
West North Central .....	9	8	4	6	2	2	2	0	2	4
South Atlantic .....	10	12	14	16	6	4	8	10	* 14	10
East South Central .....	23	36	12	18	* 38	48	0	12	<sup>10</sup> 36	53
West South Central .....	34	* 26	44	0	3	3	13	20	10	14
Mountain .....	0	9	0	9	0	18	* 11	17	9	9
Pacific .....	2	6	4	6	<sup>11</sup> 8	6	4	2	0	2

## INFLUENZA DEATH RATES

91 cities .....	8	* 10	9	11	* 13	16	* 18	24	* 13	26
New England .....	5	2	7	2	2	7	10	5	* 17	10
Middle Atlantic .....	6	5	7	10	5	17	12	29	12	59
East North Central .....	6	10	5	7	10	7	14	12	* 5	9
West North Central .....	6	15	3	9	9	3	9	21	3	18
South Atlantic .....	12	20	12	24	18	20	35	28	* 8	42
East South Central .....	6	32	32	19	* 27	26	51	45	* 31	64
West South Central .....	17	* 23	21	32	45	33	30	76	30	79
Mountain .....	17	18	70	0	131	18	* 125	41	103	35
Pacific .....	14	10	7	17	14	10	23	22	26	10

## PNEUMONIA DEATH RATES

91 cities .....	106	* 111	101	126	* 121	164	* 144	187	* 126	219
New England .....	111	116	91	119	91	160	115	113	* 101	159
Middle Atlantic .....	116	127	101	126	126	181	118	243	131	311
East North Central .....	63	69	77	94	84	103	104	110	* 82	124
West North Central .....	101	94	118	117	103	180	141	100	119	212
South Atlantic .....	142	138	132	174	174	239	196	267	201	237
East South Central .....	120	110	113	149	* 151	207	169	267	* 156	229
West South Central .....	142	* 135	131	189	152	199	128	238	148	228
Mountain .....	200	220	226	194	165	264	* 320	244	181	270
Pacific .....	122	127	89	135	175	135	167	134	158	118

\* Shreveport, La., not included.

\* Covington, Ky., and Spokane, Wash., not included.

\* Salt Lake City, Utah, not included.

\* Barre, Vt.; Fort Wayne, Ind.; Raleigh, N. C.; Savannah, Ga.; Covington, Ky.; and Memphis, Tenn., not included.

\* Barre, Vt., not included.

\* Fort Wayne, Ind., not included.

\* Raleigh, N. C., and Savannah, Ga., not included.

\* Covington, Ky., not included.

\* Covington, Ky., and Memphis, Tenn., not included.

\* Spokane, Wash., not included.

## FOREIGN AND INSULAR

### CANADA

*Quebec Province—Communicable diseases—Week ended January 16, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended January 16, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Mumps.....	85
Chicken pox.....	180	Polio-myelitis.....	6
Diphtheria.....	55	Scarlet fever.....	110
Erysipelas.....	7	Tuberculosis.....	44
German measles.....	2	Typhoid fever.....	21
Measles.....	322	Whooping cough.....	48

### LATVIA

*Communicable diseases—October, November, 1931.*—Cases of certain communicable diseases were reported in Latvia during the months of October and November, 1931, as follows:

Disease	Cases		Disease	Cases	
	Octo-ber	Novem-ber		Octo-ber	Novem-ber
Anthrax.....		1	Mumps.....	58	116
Botulism.....	1		Polio-myelitis.....	9	3
Cerebrospinal meningitis.....	2	7	Puerperal septicemia.....		14
Diphtheria.....	67	79	Scarlet fever.....	35	62
Erysipelas.....	24	16	Tetanus.....	4	2
Influenza.....	62	101	Trachoma.....	83	101
Leprosy.....	3		Typhoid fever.....	88	66
Measles.....	11	22	Whooping cough.....	57	71

### PHILIPPINE ISLANDS

*Manila—Rat bite fever.*—According to information dated January 15, 1932, there was a mild outbreak of rat bite fever in Manila, P. I. Eight cases were identified bacteriologically, and it was thought that there were probably many more unrecognized cases. The distribution of the disease was said to be the same as the former distribution of plague.





Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931			November, 1931			December, 1931		
					1-10	11-20		1-10	11-20		1-10	11-20	
Persia: 1													
Abadan.....			1	3	16	8	1	9	37	1			
Ahwaz.....			12	84	21	8	7	31	7	1			
			7	60			18	16	80	45	2	1	
Khorramabad.....							10	10	65	30	9	1	
Mohammerah.....			1										
Philippine Islands: 2													
Cebu.....			35	79	5		7	16	7	13	4	4	5
			16	59	4		5	4	10	5	3	3	3
Iloilo.....													
Siam.....													
Ayudhya Province.....			1										
			1										
Bangkok.....			1										
			1										
On vessel:													
S. S. Bandar Shalpour, at Bushire, Persia, from Basra.....													
S. S. Kohistan, at Basra, from Bushire, Persia.....													
S. S. Calday, at Kobe, Japan, from Shanghai.....													
S. S. Kasagi Maru, at Moji, from Shanghai.....													
S. S. Antoo, at Nagasaki, from Shanghai.....													
Indo-China (French) (see also table above):													
Cambodia: 3.....	308	241	12	14	1	16	2	3		1		2	1
	179	60	2	7	1	16	1					1	1
	140	143	39	18	11	2	1	5		1	8	3	3
Cochin-China: 4.....	106	42	32	13	10	2	1	4			5	2	

1 On Oct. 23, 1931, cholera was reported at Mohammerah, Abadan, and Ahwas, Persia. During the period from Oct. 22 to Nov. 7, 1931, 141 cases and 97 deaths were reported.

2 Figures for cholera in the Philippine Islands are subject to correction.

3 Reports incomplete.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE

[O indicates cases; D, death; P, present]

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended—														
				October, 1931			November, 1931			December, 1931			January, 1932					
				24	31		7	14	21	28	5	12	19	26	2	9	16	23
Algeria:																		
Algiers.....	O	2																
Philippeville.....	D	1																
Azores:																		
San Miguel Island.....	C									2				3				
Tercera Island.....	D										1							
Belgian Congo.....	D									9	7							
British East Africa (see also table below):										4	2							
Tanganyika.....	O	8	4	13													1	
Uganda.....	D	2	4	5														
Canary Islands: Palma Island—Los Llanos.....	D	285	289	276	71		87	60	41	33	31							
Oceylon: Colombo.....	D	281	207	270	69		84	58	39	35	30						8	5
Plague-infected rats.....	D	6	3	4						1							4	
Chile:	D	6	3	3						1							4	
Santiago.....	D	8									1						1	
Plague-infected rats.....	C			1														
Valparaiso.....	C		1					1										
China:																		
Shansi Provinces.....	C																	
Shensi Province.....	C																	
Dutch East Indies:																		
Batavia and West Java.....	C	58	65	113	28	24	38	39	44	39	40							
Java and Madura.....	D	58	65	113	28	24	38	39	44	39	40							
	D	205	233	325	97	133	132	150	152	171	167	212						







Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931
British East Africa (see also table above):							Peru—Continued						
Kenya:	154	494	235	14	64	44	Huancabamba—Ayacaba.					7	
Ecuador:							Huaura—Chancay.					6	
Almor Parish—Los Hoyos.	C			1	3		Plague-infected rats.				1		
Amalusa Parish—Cangochoyapa.	C				2		La Samana—Huacayoc.					1	
Calvas Canton.	C			4	1		Lima—Lima.						
Carlamanga.	C						Lima—Lima (haciendas).						
Ovleria.	C						Pailan—Trujillo.						
Celicia Canton—Choras.	C				1		Paludo—Huacayoc.						
Loja Canton—	C						Parovicia—Chancay.						
Lara.	C			20			Quispampa—Huancabamba.						
Namiro.	C				2		San Pedro—Pacasmayo.						
Patallio.	C				7		Supa—Chancay.						
Tuburo.	C				1		Senegal						
Pallas Canton—San Antonio.	C			1	3		Baol <sup>1</sup> .		27	101	13	6	2
Indo-China.	D	2	1	4	1		Dakar <sup>1</sup> .		13	58	8	2	
Madagascar (see also table above):							Diourbel <sup>1</sup> .		64	95	45	4	
Ambositra Province.	C	15	1	2	1	8	Louga <sup>1</sup> .		56	73	106	4	
Antsirabe Province.	D	15	1	1	1	5	Rufisque <sup>1</sup> .		4	3	2	1	19
Miarinarivo Province.	D	12	12	22	19	17	Thies <sup>1</sup> .		2	1	1	1	10
Moramanga Province.	D	5	5	20	14	16	Tivaouane <sup>1</sup> .		34	2	1	7	12
Tananarive Province.	D	1	1	3	11	11			16	26	12	7	16
Peru.									12	16	26	7	7
Barranca—Chancay.	D	10	5	45	65	120			3	7	10	5	
Callao—Plague-infected rats.	D	9	5	44	63	117			2	3	2		
Chapen—Pacasmayo.	D	5	5	19	2				2	3	2		
Eten—Chiclayo.	D	1	2	14	2				2	2			

<sup>1</sup> Reports incomplete.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	Week ended—																															
	June 28—July 26, 1931		July 27—Aug. 24, 1931		Aug. 25—Sept. 19, 1931		Sept. 20—Oct. 17, 1931		October, 1931					November, 1931					December, 1931					January, 1932								
	25, 1931	22, 1931	29, 1931	26, 1931	Sept. 20, 1931	27, 1931	Oct. 4, 1931	1, 1931	8, 1931	15, 1931	22, 1931	29, 1931	Oct. 6, 1931	13, 1931	20, 1931	27, 1931	Nov. 3, 1931	10, 1931	17, 1931	24, 1931	Dec. 1, 1931	8, 1931	15, 1931	22, 1931	29, 1931	Jan. 5, 1932	12, 1932	19, 1932	26, 1932	Feb. 2, 1932		
Algeria:																																
Algiers	1																															
Constantine	1																															
Brazil:																																
Porto Alegre (alastrim)	41	34	48		46																											
Santos	1	1	4		2																											
Rio de Janeiro																																
British East Africa: Tanganyika	149	19	50		1, 184																											
	17		5		97																											
British South Africa:																																
Northern Rhodesia	21	26			1																											
Southern Rhodesia	2		3																													
Canada:																																
Alberta	1	1			12																											
British Columbia	2	5	2																													
Manitoba																																
Winnipeg			1																													
Newa Scotia																																
Ontario	35	5	6		17																											
Kingston			1																													



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; F, present]

Place		Week ended—																										
		June 28— July 25, 1931		July 26— Aug. 22, 1931		Aug. 23— Sept. 19, 1931		Sept. 20— Oct. 17, 1931		October, 1931				November, 1931				December, 1931				January, 1932						
		24	31	7	14	21	28	5	12	19	26	2	9	16		24	31	7	14	21	28	5	12	19	26	2	9	16
India (French):																												
Chander Nagar	C	3																										
Karikal	D	2																										
	D	4																										
Pondicherry Province	D	28	7	3	1	1		2	4																			
	D	4	6	3	3	6		2	4																			
Indo-China (see also table below): Saigon and Cholon	D	28	26	18	6	9	6	5	5	10	1																	
	D	28	20	24	21	9	5	5	6	10	1																	
	D	3	2	6	4	2	4	7	9	13	6	3	8															
	D	1	1	3	2	1	2	3	6	9	6	2	7															
Iraq:																												
Baghdad	D																											
	D																											
Basra	D																											
	D																											
Mosul Liwa	D																											
Ivory Coast (see table below).																												
Janina	D	1																										
Japan: Yokohama	C																											
Mexico (see also table below):																												
Jalisco (State)—Guadaluajara	D	3	4																									
Mexico City and surrounding territory	D	22	6	1	1	2	4	2	1	6																		
	D	8	2	2	4																							
Monterrey	D																											
San Luis Potosi	D																											
Torreón	D																											
	D																											
Morocco (see table below).																												
Netherlands: Friesland—Opsterland	C																											
Nigeria	C																											
	C																											
Panama: Chiriqui	C																											
Poland	C																											
Portugal:	C																											
Lisbon	C	18	1																									
Oporto	C	45	37	66	17	26	23	21	25	35	14	26	23	1														
	C	1					1																					

Place	June, 1931				July, 1931				August, 1931				September, 1931				October, 1931				November, 1931				December, 1931			
	1931				1931				1931				1931				1931				1931				1931			
	1-10	11-20	21-30	31	1-10	11-20	21-30	31	1-10	11-20	21-30	31	1-10	11-20	21-30	31	1-10	11-20	21-30	31	1-10	11-20	21-30	31	1-10	11-20	21-30	31
Rumania (see table below).																												
Siam.....																												
Spain.....																												
Straits Settlements.....																												
Sudan (Anglo-Egyptian).....																												
Syria (see table below).																												
Turkey (see table below)																												
Union of Socialist Soviet Republics (see table below).																												
Union of South Africa:																												
Cape Province.....																												
Natal.....																												
Orange Free State.....																												
Transvaal.....																												
Upper Volta.....																												
On vessel.....																												
Brazilian ship Jabotao at New Orleans from Brazil.																												
S. S. Taif (pilgrum ship) at Suakin from Jeddah.																												
S. S. Bellaso at Mobile, from Habana, Cuba, and Hull, England.																												
Syria: Beirut.....																												
Indo-China (see also table above).....																												
Ivory Coast.....																												
Syria: Beirut.....																												
China: Harbin.....																												
Chosen.....																												
France.....																												
Greece.....																												
Mexico (see also table above).....																												



Place	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931
Mayo County—Castiblanco							
Westport							
Waterford County—Lismore							
Lithuania (see table below)							
Mexico:							
Durango							
Guadalupe							
Mexico City, including municipalities in Federal District							
San Luis Potosi							
Torreón							
Morocco							
Palestine							
Paraguay: Asunción							
Peru							
Poland							
Portugal: Oporto							
Rumania							
Tunisia: Tunis							
Turkey (see table below)							
Union of Socialist Soviet Republics (see table below)							
Union of South Africa							
Cape Province							
Municipality of East London							
Natal							
Orange Free State							
Transvaal							
Yugoslavia (see table below)							
Czechoslovakia							
Greece							
Guatemala							
Lithuania							
Turkey							
Union of Socialist Soviet Republics							
Yugoslavia							

Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal regions.









UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES  
PUBLIC HEALTH SERVICE

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VOLUME 47    ::    ::    NUMBER 7

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FEBRUARY 12 - - 1932

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## SPECIAL ARTICLES

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Effect of Lithium Chloride on *S. scarlatinae* Morphology  
Calcium, Phosphorus, and Protein Metabolism in Leprosy



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932

## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

THE PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

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## THE EFFECT OF LITHIUM CHLORIDE ON THE MORPHOLOGY OF *STREPTOCOCCUS SCARLATINAE*

By R. R. SPENCER, *Surgeon*, and W. G. WORKMAN, *Assistant Surgeon, United States Public Health Service*

A marked pleomorphism of certain bacterial species is readily induced by aging or growing them in media that are more or less unfavorable. These "involution forms," formerly so-called, are no longer regarded by many competent bacteriologists as abnormal, retrograde, or degenerative bodies. The studies of Almquist (1), Enderlein (2), Lohnis (3), Hort (4), Mellon (5), and Hadley (6), to mention only a few, suggest that these forms represent normal phases or stages in the life cycle of the species. Lohnis, in studies upon *Azotobacter*, found that this organism "may present itself in not less than 14 types of growth all so different from each other that they would have to be accepted as separate species belonging to five or six different genera."

The addition of 0.5 or 1 per cent lithium chloride to the media has been found by many investigators to be a simple and effective means of inducing these pleomorphic changes after only a few hours' incubation. For example, Kuhn (7) has described the so-called "Pettenkoferiaformen" when cholera vibrios were grown in the presence of lithium chloride, and Hadley and his coworkers in their studies upon the filterable forms of *B. dysenteriae* (Shiga) induced by the addition of lithium chloride to the broth media have also noted many rod forms that appear to be undergoing granulations as well as enlarged cells usually round or oval and referred to as "balloon" bodies, with a diameter of 2 to 7 micra. Hadley believed these forms to be similar to the Pettenkofer bodies of Kuhn.

In studies of the *Salmonella* group of organisms Gray (8) has called attention to "involution forms" of swollen rods or coccoid bodies developing in the presence of lithium chloride broth or peptone water which were used as selective media for staphylococci and *B. fecalis alkaligenes*.

*B. pestis* which produces the classical involution forms in 2 per cent salt agar developed in our hands identical forms in 0.5 per cent lithium chloride broth after a few hours' incubation. Figure 1 is a



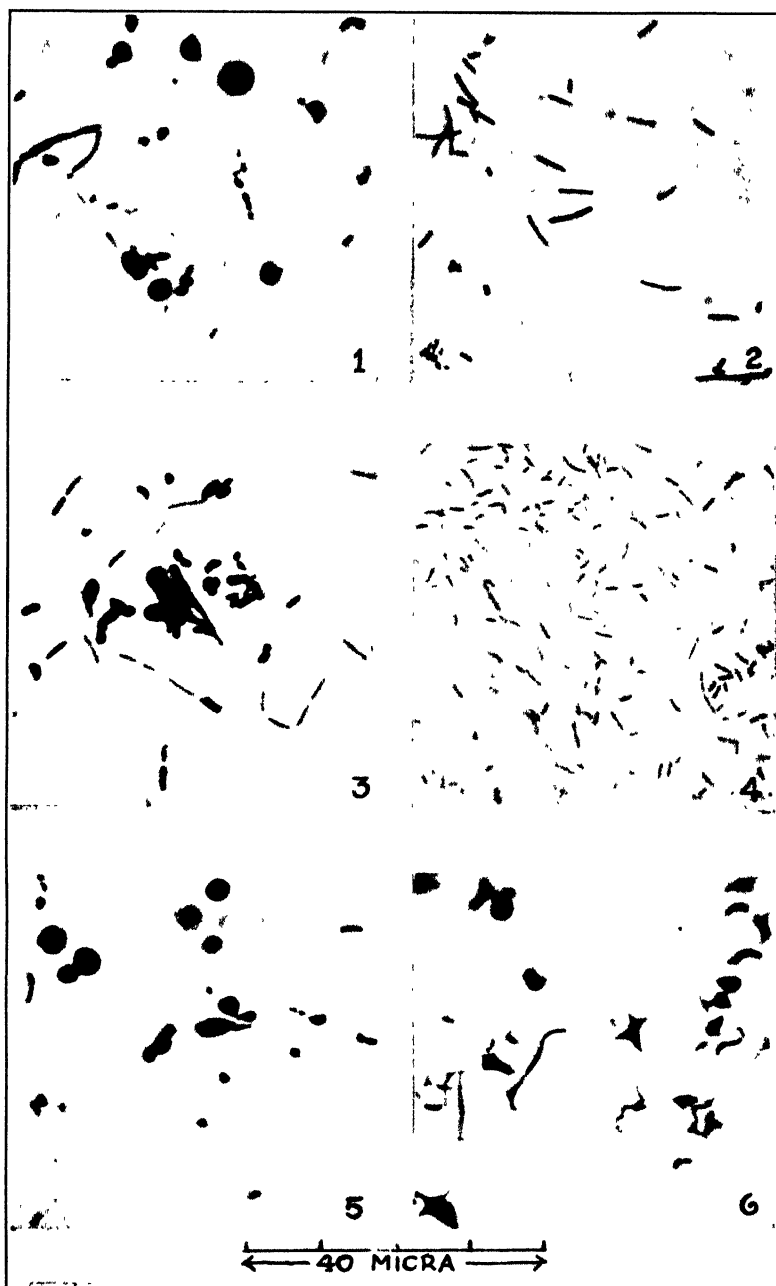
photomicrograph of *B. pestis* after only six hours' growth in lithium chloride broth.

In lithium chloride cultures of *Streptococcus scarlatinae* we have observed almost without exception an abundance of certain ring forms which have been invariably absent from the controls (cultures of the same organism in plain broth) and from lithium chloride cultures of *B. coli*, *B. proteus* X<sub>19</sub>, and *B. pestis*. Similar forms have been seen, however, in lithium chloride cultures of *Staphylococcus aureus*, but not in cultures of pneumococcus and meningococcus. We have not tested other species of cocci. We consider these forms of sufficient significance to be recorded since they can be produced so readily in lithium broth and, so far as known, have not heretofore been mentioned in the literature; but we have not attempted as yet to interpret their significance. Furthermore, our observations on the development of streptococcus in lithium chloride seem to lend support to the conception of the fusion of two or more individuals, but we are not prepared to say that this is a sexual phenomenon.

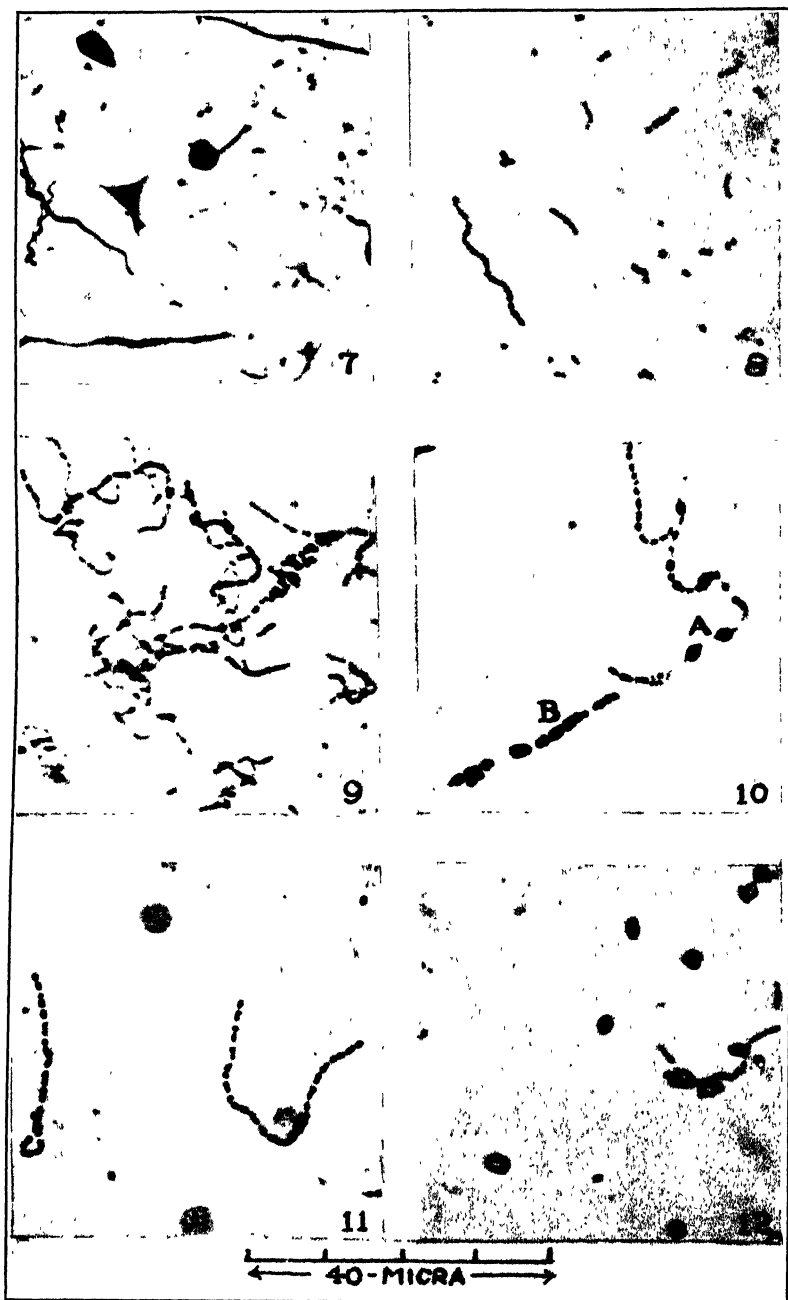
The effect of the chlorides of other salts (potassium, strontium, and magnesium) was also tried upon various organisms, but lithium chloride was by far the best for inducing morphological changes. Figure 3 is a photomicrograph of a 24-hour lithium chloride broth culture of *B. proteus* X<sub>19</sub>, and Figures 5, 6, and 7 are photomicrographs of cultures of *B. coli* after 1, 2, and 5 days' growth, respectively, in the same media. A very wide range of pleomorphism is observed. One may distinguish cocci, bacilli, filiforms, spirillae, branching rods, triangular forms, and pyramidal shapes, as well as giant ovals and giant cocci. None of these unusual forms is seen in the plain broth control cultures of *B. proteus* X<sub>19</sub> (Fig. 2) and *B. coli* (Fig. 4).

Figures 8 and 9 are the control cultures of streptococcus after 2 and 10 days, respectively, in plain broth. There is no pronounced change in morphology. However, Figures 10 to 16, inclusive, represent cultures of the same organism in lithium chloride broth after varying intervals.

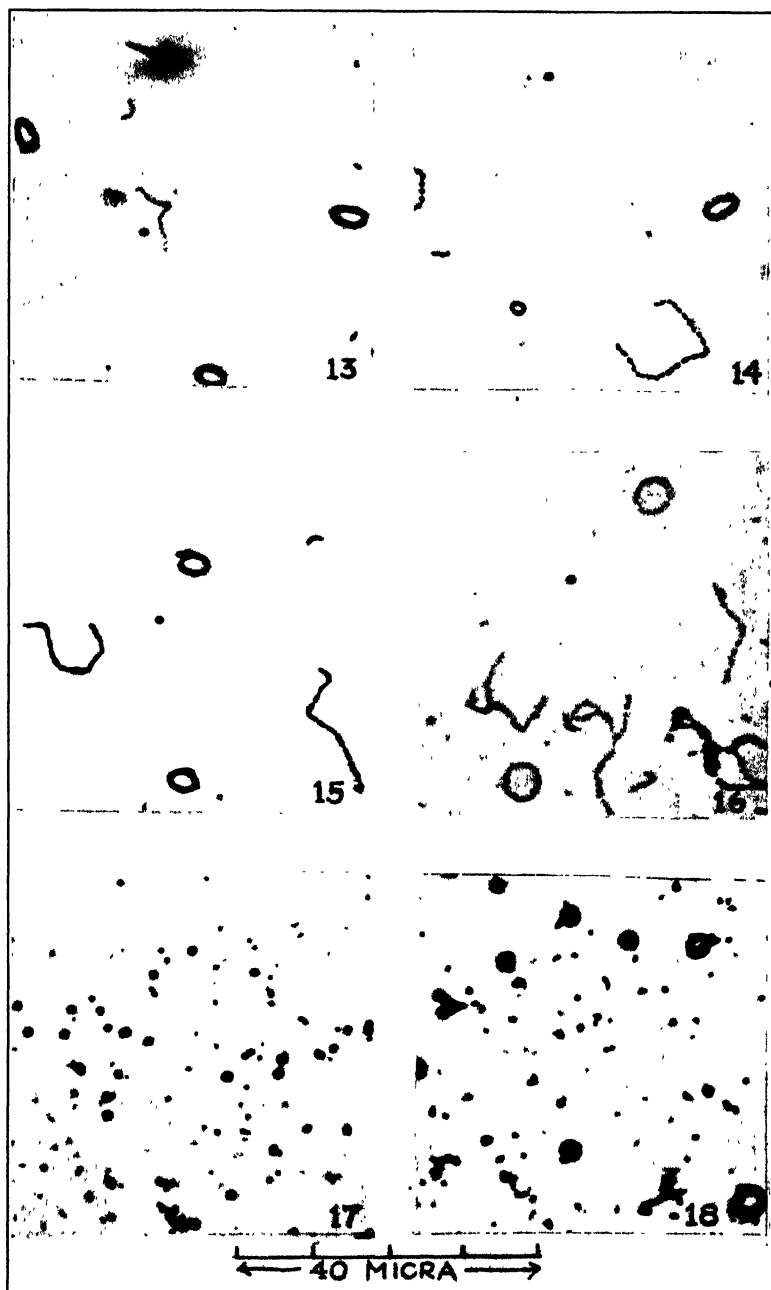
We believe that the streptococcus, because of its chain formation, is a more suitable organism than most others for the study of bacterial fusion, or what some might call "isogamic conjugation" or zygospore formation. In Figure 10 can be seen a chain of streptococci in which giant cocci (zygospores?) are being formed. Along that part of the chain where the individuals are normal in size there are about eight or nine cocci within a distance of 10 micra, while in another section of equal length in the same chain there are only two enlargements (zygospores?) with spaces on either side showing no stainable substance or else mere shadows (A). This same chain of organisms gives the impression (at B) that the enlargement has been formed by the fusion and concentration of the substance of two or more individuals



1, *B. pestis* 6 hours' growth in lithium broth; 2, *B. proteus* X<sub>10</sub> 24 hours' growth in plain broth;  
 3, *B. proteus* X<sub>10</sub> 24 hours' growth in lithium broth; 4, *B. coli* 4 days' growth in plain broth;  
 5, *B. coli* 24 hours' growth in lithium broth; 6, *B. coli* 48 hours' growth in lithium broth



7, *B. coli* 5 days' growth in lithium broth; 8, *Strep. scarlatinae* 2 days' growth in plain broth; 9, *Strep. scarlatinae* 10 days' growth in plain broth; 10, *Strep. scarlatinae* 24 hours' growth in lithium broth; 11, *Strep. scarlatinae* 3 days' growth in lithium broth; 12, *Strep. scarlatinae* 5 days' growth in lithium broth



13, *Strep. scarlatinae* 5 days' growth in lithium broth; 14, *Strep. scarlatinae* 5 days' growth in lithium broth; 15, *Strep. scarlatinae* 5 days' growth in lithium broth; 16, *Strep. scarlatinae* 14 days' growth in lithium broth; 17, *Staph. aureus* 10 days' growth in lithium broth; 18, *Staph. aureus* 10 days' growth in lithium broth



without breaking the continuity of the chain. In other words, the picture suggests a flow of substance along the axis of the chain to certain points of concentration, thus forming the zygospor (isogamic conjugation?). This appearance is by no means unusual in lithium chloride cultures of the streptococcus with which we worked and has been observed innumerable times.

Figure 11 shows giant cocci separate from the chains and containing small granules which, without proof, we assume to be gonidia or regenerative bodies, described by various workers.

In Figures 12, 13, 14, 15, and 16 we see various sizes of the ring forms, the significance of which is unknown. From a study of numerous preparations we have obtained the impression that some of the rings at least are formed by loops of the normal streptococcic chains, the individual organisms of which subsequently coalesce into an evenly stained protoplasmic ring. On the other hand, in preparations of *Staphylococcus aureus* grown in lithium chloride broth, rings seem to appear as enlargements of a single organism. (Fig. 17.)

In stained preparations the giant cocci and ring forms are brought out better by alcoholic fixation than by heat fixation, which latter method seems to distort or destroy them. The Giemsa stain is also to be preferred.

While our observations strongly suggest that some of these unusual forms are developed by means of the fusion of two or more individual cocci, as yet we have not been able to prove that they are regenerative bodies which give rise to new forms. The actual transformation of the spherical and globular elements into normal forms has been observed in cultures of typhoid and other organisms by Almquist (1). A large number of normal streptococcic chains are always to be found in all lithium chloride cultures, and when transfers are made from such cultures to plain broth the normal streptococcic morphology only is observed. Although the ring forms are abundant in stained smears, when the same cultures are diluted we have not been able to find them in wet preparations where single cell isolation might be performed. Therefore, we can not state that these forms are actual phases of the organism.

That the ring forms are not artefacts is suggested by the fact that they are not seen in control cultures grown in plain broth nor in cultures of other organisms in lithium chloride broth nor in smears of the sterile lithium broth alone. On the other hand, the variability in size of the rings, often seen on the same slide (Figs. 12, 13, and 14 are photomicrographs of different areas of the same smear), the fact that they can not be made out readily in wet preparations, and the fact that they can not be reproduced by transfers are in opposition to the view that they are living phases of the streptococcus.

## SUMMARY

1. Lithium chloride broth is a suitable medium for the production of pleomorphism in many bacterial species.
2. Streptococcus, because of its chain formation, lends itself readily to the study of the fusion of individual bacteria.
3. Certain ring forms in streptococcus and staphylococcus broth cultures are described. The significance of these forms is not known.

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## CALCIUM, PHOSPHORUS, AND PROTEIN METABOLISM IN LEPROSY

### A Study of the Total Calcium, Diffusible and Nondiffusible Calcium, Phosphorus, Total Proteins, Albumin, and Globulin in the Blood Serum

By JERALD G. WOOLEY, *Acting Assistant Surgeon*, and HILARY ROSS, *Druggist*,  
*United States Public Health Service, United States Marine Hospital (National Leprosarium), Carville, La.*

The growing interest in disturbances of calcium metabolism within recent years has stimulated investigations of the state of calcium in blood serum and its distribution in various body fluids. It is generally considered at the present time that calcium exists in the serum; first, in the ionic form (although the amount ionized is not definitely known); second, as undissociated molecules in equilibrium with the ions; and third, in nonionizable combination with organic constituents. The quantity in the blood serum of the first two forms, termed "diffusible calcium," seems to indicate that this form rather than the total calcium is the better index of the physiologically active or available calcium (1). The last form, termed "nondiffusible," is looked upon as a calcium-protein combination; and while little is known regarding its real nature, the function of this portion may have its own special uses.

Loeb (2) in his interesting work on the Proteins and Theory of Colloidal Behavior, shows the possible existence of compounds of calcium and protein, since proteins at a hydrogen-ion concentration

above their isoelectric point (namely, more alkaline) form compounds with monovalent and divalent cations.

In an investigation of the state of calcium in the blood sera of lepers we (3) found in 53 cases examined, a diminution in the diffusible form and rather a high concentration in the nondiffusible form, although the total content was within physiologic limits. Bones of the hands and feet of 48 of the 53 patients were examined by X ray, and it was found that 44 had atrophy either in the form of decalcification or bone absorption to some degree.

In disease, certain changes in the serum proteins have long been recognized. Changes in the ratio of albumin to globulin have been especially studied. Morse (4) states in substance that, besides nephritis, other diseases exhibit differences in the ratio of globulin to total protein and to albumin, infections and toxemias causing a typical rise in the proportion of globulin, and that an increase in the proportion of globulin to albumin indicates aggravation of the disease.

Peters and Eiserson (5) state: "Salvesen and Linder, in 1923, from a study of the relation of calcium to protein in sera and transudates from patients with nephritis, concluded that the amount of protein in body media also had an important influence upon the concentration of calcium in these media. Since then, Marrack and Thacker have shown that proteins increase the solubility of calcium in true and artificial sera, probably by the formation of un-ionized or only slightly ionized calcium-protein complexes."

Since leprosy is a chronic infectious disease producing pathological changes in many tissues of the body, bones, peripheral nerves, etc., we desired to carry on experiments to see whether there was any regular relationship between the total serum protein, albumin and globulin fractions, diffusible and nondiffusible calcium, and phosphorus in the blood serum in leprosy, or whether an increase in globulin was merely related to the degree of infection and intoxication or that of tissue destruction, independent of the calcium metabolism.

The forty-six patients selected were of various types, nationalities, duration of leprosy, and state of progression, and their sera were analyzed for total calcium, diffusible calcium, inorganic phosphorus, total proteins, albumin and globulin, and the complement fixation.

Due to the various results obtained by different investigators for albumin and globulin which were probably due to variations in the method used, we analyzed concurrently the sera of six young men, physicians who had recently passed rigid physical examinations for entrance into the United States Public Health Service.

#### ANALYTICAL METHODS

Approximately 20 cubic centimeters of blood was collected for analysis from a cubital vein. The blood was allowed to clot and was centrifuged and the serum was removed from three to four hours after



the specimen had been taken and was preserved at a temperature of 6° to 8° C. The serum for diffusible calcium was dialized within 24 hours. The protein determinations were made within 48 hours, and the other analyses were completed within a week.

The total calcium determinations were made on the serum by Clark-Collip modification of the Kramer-Tisdall method (6); diffusible calcium by a negative pressure filtration described by Moritz (7), the filtrate being tested according to the method of Burk and Greenberg (8) to determine any leakage of protein material through the sac; phosphorus according to the method of Benedict and Theiss (9); total proteins by a micro-Kjeldahl method; albumin by Howe (quoted by Hawk) (10); globulin by subtracting the albumin from the total protein; the complement fixation by Kolmer's quantitative method, run in parallel with Kahn's precipitation test.

TABLE 1.—*Determination for controls*

Control	Protein	Albumin	Globulin	Ratio, albumin globulin	Calcium, total, mg. per 100 c. c. serum	Diffusible calcium, mg. per 100 c. c. serum	Diffusible calcium	Calcium, nondiffusible, mg. per 100 c. c. serum	Phosphorus, mg. per 100 c. c. serum
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>				<i>Per cent</i>		
JGW.....	7.18	5.50	1.68	1:3.2	10.5	5.4	51.4	5.1	3.0
JGH.....	6.56	4.90	1.66	1:2.9	10.5	5.3	50.4	5.2	4.2
DWN.....	7.81	5.50	2.31	1:2.3	10	5.5	55.0	4.5	3.4
EJR.....	7.18	5.18	2.00	1:2.5	9.8	5.4	56.1	4.4	3.8
ROG.....	8.12	5.84	2.28	1:2.5	10.9	5.3	48.5	5.6	4.1
WEA.....	7.18	4.90	2.28	1:2.1	11	5.5	50.0	5.5	3.8
Minimum.....	6.56	4.90	1.66	1:2.1	9.8	5.3	48.5	4.4	3.0
Average.....	7.34	5.30	2.03	1:2.6	10.4	5.4	51.9	5	3.7
Maximum.....	8.12	5.84	2.31	1:3.2	11	5.5	56.1	5.6	4.2

The normal figures for total protein as given by different investigators have been uniform, 6 to 8 per cent, though the limits for normal values for serum albumin and globulin appear to be fairly wide. The subject of the serum proteins in man has been carefully considered by Rowe (11), who employed the microrefractometric method of Robertson. Rowe found, in a series of 22 normal cases, the serum albumin to vary between 4.6 and 6.7 per cent; the serum globulin between 1.2 and 2.3 per cent; the total serum proteins between 6.5 and 8.2 per cent. The percentage of globulin varies from 16 to 32. Our figures in the controls (Table 1) are comparable with those of Rowe.

The average figures for total calcium, diffusible calcium, and phosphorus agree with our findings in a previous report (3) and with those of other investigators (7) (12).

The data which have been obtained on the blood sera of lepers have been divided into two main groups. The first group includes those cases which show a diffusible calcium content of 50 per cent and over (Table 2); the second group includes cases showing a diffusible calcium content of less than 50 per cent (Table 3).

TABLE 2.—Patients showing a diffusible calcium of 50 per cent and over

No.	Race	Sex	Age Years	Appro- ximate duration of leprosy Years	Type	Stage of progression <sup>1</sup>	Activity <sup>2</sup>	Pro- teins Per cent, Percent	Albu- min Per cent, Percent	Glob- ulin Per cent, Percent	Ratio, albumin globulin	Calcium, total mg per 100 c. c. serum	Calcium, diffusible, mg per 100 c. c. serum	Diffusible calcium Per cent	Nondif- fusible calcium, mg. per 100 c. c. serum	Phos- phorus, mg per 100 c. c. serum	Comple- ment fixation
864	White	M	21	5	Mixed	A. M. A.	Retg.	7.81	5.93	1.88	1.31	9.3	5.0	53.6	4.3	4.1	Positive.
863	White	M	54	3	Mixed	A. M. A.	Imp.	6.20	4.25	1.95	1:2.1	10	4.6	56.0	4.4	3.8	Negative.
843	White	F	22	6	Nodular	I. E.	Stuy.	7.18	5.18	2.00	1:2.5	9.9	5.0	50.5	4.9	3.4	Negative.
869	White	M	31	19	Mixed	A. M. A.	Imp.	8.71	4.37	4.34	1:1.0	8.7	4.9	56.3	3.8	3.5	Negative.
288	White	M	19	12	Nodular	A. F. A.	Retg.	7.81	3.12	4.69	1.0.6	11	6.2	56.3	4.8	4.1	Negative.
404	Chinese	M	32	7	Mixed	A. F. A.	Imp.	6.25	3.53	2.67	1:1.3	9.7	5.2	53.6	4.5	3.3	Negative.
718	White	M	43	13	Anesthetic	I. M. A.	Stuy.	7.81	4.68	3.13	1:1.5	9.5	5.0	52.6	4.5	2.4	Positive.
462	White	F	27	12	Mixed	A. M. A.	Imp.	8.96	5.25	3.71	1:1.4	10.6	5.9	55.6	4.7	4.5	Positive.
672	Mexican	M	38	2	Mixed	I. E.	Stuy.	8.34	5.18	3.16	1:1.6	10.4	5.2	50.0	5.2	2.5	Positive.
407	Greek	M	37	8	Mixed	A. M. A.	Imp.	6.56	4.25	2.31	1:1.8	10.8	5.8	53.7	5.0	3.0	Negative.
626	White	M	22	6	Mixed	A. E.	Imp.	6.25	4.02	2.23	1:1.8	10.5	6.3	60.0	4.2	2.6	Negative.
722	Negro	F	22	6	Mixed	A. M. A.	Stuy.	7.18	4.06	3.12	1:1.3	10	5.3	53.0	4.7	3.3	Negative.
720	White	F	22	8	Mixed	A. E.	Imp.	7.81	4.06	3.75	1:1.0	10.6	5.6	52.7	5.0	3.3	Negative.
707	White	F	36	9	Anesthetic	A. E.	Stuy.	7.81	5.18	2.63	1:1.9	10	5.6	56.0	4.4	1.7	Negative.
	Minimum							6.20	3.12	1.88	1:0.6	8.7	4.9	50.0	3.8	1.7	
	Average							7.47	4.50	2.97	1:1.5	10	5.4	54.0	4.6	3.2	
	Maximum							8.96	5.93	4.69	1:3.1	11	6.3	60.0	5.2	4.5	

<sup>1</sup> A. M. A. = Active, moderately advanced.

A. F. A. = Active, far advanced.

I. M. A. = Inactive, moderately advanced.

I. E. = Inactive, early.

A. E. = Active, early.

Retg. = Retrograding.

Stuy. = Stationary.

Imp. = Improving.

<sup>2</sup> Months.

TABLE 3.—Patients showing a diffusible calcium of less than 50 per cent

No	Race	Sex	Age	Approximate duration of leprosy	Type	Stage of progression	Activity	Proteins	Albumin	Globulin	Ratio, albumin globulin	Calcium, total, mg per 100 c. c. serum	Diffusible calcium, mg per 100 c. c. serum	Nondiffusible calcium, mg per 100 c. c. serum	Phosphorus, mg per 100 c. c. serum	Comple- ment fixation
115	White	M	25	11	Nodular	A. M. A.	Retg.	Per cent	Per cent	Per cent	1:0.6	10.7	4.4	6.3	3.8	Negative.
224	White	F	23	16	Mixed	A. M. A.	Retg.	7.81	3.12	4.69	1:0.6	15.0	4.1	9.9	3.8	Positive.
8	Negro	M	45	10	Nodular	A. M. A.	Retg.	7.81	2.80	5.01	1:0.5	15.0	5.1	9.9	3.4	Negative.
46	White	F	45	17	Nodular	A. F. A.	Retg.	7.81	4.06	3.75	1:0.8	10.6	4.6	5.9	3.4	Positive.
156	Chinese	M	37	17	Anesthetic	A. M. A.	Retg.	10.31	4.68	5.63	1:0.8	10.6	4.2	6.4	2.9	Negative.
265	Negro	M	31	13	Nodular	A. F. A.	Retg.	8.75	4.76	3.99	1:1.2	11.0	4.2	6.8	2.9	Negative.
300	White	M	40	13	Nodular	A. F. A.	Retg.	8.75	4.68	4.07	1:1.0	10.8	5.0	5.8	2.3	Negative.
161	White	M	34	14	Nodular	A. M. A.	Retg.	7.18	4.06	3.12	1:1.3	10.6	4.5	5.8	2.5	Positive.
591	Japanese	M	48	9	Mixed	A. M. A.	Imp.	7.81	3.75	4.06	1:1.0	10.0	4.5	5.5	2.6	Positive.
421	Negro	M	33	7	Mixed	A. M. A.	Retg.	6.56	3.12	3.44	1:0.9	10.8	4.7	6.1	4.5	Positive.
504	White	M	55	4	Mixed	A. F. A.	Retg.	7.00	3.12	3.88	1:0.8	11.5	4.2	7.3	4.0	Negative.
717	White	M	55	4	Mixed	A. M. A.	Retg.	7.18	3.43	3.75	1:0.9	10.6	4.4	6.2	2.5	Positive.
516	Mexican	M	20	2	Mixed	A. M. A.	Retg.	9.25	3.43	3.00	1:1.0	12.1	4.4	7.2	2.3	Positive.
294	White	M	35	14	Mixed	A. F. A.	Retg.	7.18	3.03	3.43	1:1.1	10.6	4.4	6.5	2.5	Positive.
608	White	M	39	14	Mixed	A. M. A.	Retg.	7.18	3.75	3.43	1:1.1	10.6	4.7	6.0	2.7	Positive.
307	Jew	M	44	19	Mixed	A. M. A.	Imp.	7.18	3.00	3.35	1:1.1	10.6	4.1	6.5	2.5	Positive.
610	White	M	24	13	Mixed	A. M. A.	Imp.	7.18	4.15	3.66	1:1.0	10.6	4.8	6.3	2.5	Positive.
209	White	M	24	13	Mixed	A. M. A.	Imp.	7.18	3.43	3.75	1:0.9	11.0	4.8	6.2	2.5	Negative.
665	White	M	26	3	Nodular	A. M. A.	Retg.	11.56	4.80	2.93	1:1.3	10.0	4.5	5.5	2.5	Negative.
426	White	M	30	15	Mixed	A. M. A.	Retg.	6.99	4.06	3.97	1:1.1	10.0	4.7	5.3	2.5	Negative.
670	Mexican	F	16	2	Mixed	A. F. A.	Retg.	8.18	4.65	3.53	1:1.3	9.4	4.0	5.4	2.8	Negative.
680	Negro	M	26	2	Mixed	A. M. A.	Retg.	6.56	4.10	2.46	1:1.6	11.5	4.0	7.5	2.3	Negative.
667	White	M	73	7	Mixed	A. F. A.	Imp.	7.62	4.37	3.25	1:1.3	11.0	4.6	5.5	2.5	Negative.
681	Mexican	M	28	3	Mixed	A. M. A.	Imp.	7.18	4.10	3.08	1:1.5	10.0	4.5	5.5	2.5	Negative.
679	White	F	41	8	Nodular	A. M. A.	Imp.	7.18	3.87	2.81	1:1.4	10.7	4.7	6.0	2.5	Negative.
682	White	M	34	18	Mixed	A. M. A.	Retg.	6.25	3.75	2.50	1:1.5	9.3	4.3	5.0	2.0	Negative.
663	White	F	42	15	Anesthetic	A. F. A.	Retg.	9.62	5.93	3.69	1:1.6	10.0	4.0	5.7	2.0	Negative.
668	Mexican	F	34	15	Mixed	A. M. A.	Retg.	7.62	4.65	2.97	1:1.5	10.6	4.9	5.7	2.1	Negative.
674	White	M	71	11	Mixed	A. M. A.	Retg.	7.30	4.65	2.65	1:1.7	10.9	4.8	6.1	2.5	Negative.
439	White	M	72	4	Mixed	A. M. A.	Retg.	7.30	4.25	2.31	1:1.8	10.1	4.8	5.3	2.5	Negative.
672	White	M	34	10	Mixed	A. M. A.	Imp.	6.56	4.68	2.31	1:2.0	10.5	4.7	5.8	3.3	Negative.
713	Chinese	M	23	3	Mixed	A. M. A.	Retg.	6.08	4.68	2.31	1:2.0	10.5	4.7	5.8	3.3	Negative.
	Minimum						Retg.	6.25	2.80	2.31	1:0.5	9.3	4.0	5.0	2.3	Positive.
	Average						Retg.	7.62	4.06	2.57	1:1.1	10.7	4.6	6.1	2.4	Positive.
	Maximum						Retg.	11.56	5.93	3.76	1:2.0	15	5.2	9.9	7.1	Positive.

1 A. M. A. = Active, moderately advanced.  
 A. F. A. = Active, far advanced.  
 I. M. A. = Inactive, moderately advanced.  
 I. E. = Inactive, early.  
 A. E. = Active, early.

Retg. = Retrograding.  
 Stny. = Stationary.  
 Imp. = Improving.

The 46 patients represent the following types and stages of progression:

Stage	Type			Total
	Nodular	Mixed	Anes- thetic	
Inactive, early.....	1	4	-----	5
Inactive, moderately advanced.....	1	1	2	4
Active, early.....	1	2	1	4
Active, moderately advanced.....	4	21	-----	25
Active, far advanced.....	2	5	1	8
Total.....	9	33	4	46

The results of Table 2 show that the 14 patients had an approximately normal total calcium and inorganic phosphorus as compared with the controls, with the exception of case No. 707, which shows an inorganic phosphorus content of 1.7 milligrams which is a little low; and case No. 569 showing a total calcium of 8.7 milligrams. The average findings in this series for diffusible calcium were within the normal range, though 6 of the cases were slightly below normal. Of these, 2 were 5.2 milligrams, 3 were 5 milligrams, and 1 was 4.9 milligrams.

In contrast to the constancy of the total protein values, which are all within the normal range of our controls, except in cases Nos. 462 and 569, which are slightly above normal, showing 8.96 and 8.71 per cent, we find in eight cases the globulins increased, with a lowered albumin-globulin ratio. Five of these cases show a negative Wassermann; three were positive. Three cases of the 14 show normal values on all determinations.

The average albumin-globulin ratio on the 14 cases was 1:1.5, as against 1:2.6 of our controls, the lowest ratio being 1:0.6 and the highest 1:3.1, as against 1:2.1 lowest and 1:3.2 highest in the controls.

Seven patients show improvement, 5 are stationary, and 2 show retrogression.

The results presented in Table 3 show that 32 of the 46 patients had a low diffusible calcium, averaging 4.6 milligrams, as against 5.4 milligrams of the controls. The total calcium and total inorganic phosphorus were within physiologic limits in 30 cases; 2 cases showed a high total calcium, No. 234, 15 milligrams, and No. 717, 12.1 milligrams, while case No. 234 also showed a high inorganic phosphorus content of 7.1 milligrams.

It will be noted that in practically all instances the total protein values were within normal limits, with the exception of cases 46, 456, 209, 156, and 265, which showed, respectively, 10.31, 9.62, 11.56, 8.75

and 8.75 per cent. The relationship between albumin and globulin was markedly disturbed. There was a more striking increase in the globulins than in those cases approaching a normal diffusible calcium (Table 2); cases 439 and 673 were the only two within the normal range, showing 2.31 per cent. The albumin-globulin ratio was lower than in the patients having a diffusible calcium content over 50 per cent, averaging 1:1.1, as against 1:1.5. (Table 2.)

Of the 32 cases, none showed normal values throughout all the determinations. Fourteen patients showed retrogression, 9 were stationary, and 9 showed improvement. Nineteen cases showed a positive Wassermann, 11 were negative, and 2 cases were not determined.

In the entire series (Tables 2 and 3) the average findings of inorganic phosphorus, total calcium, and total proteins were well within the normal range except in those cases previously mentioned. (Cases 46, 456, and 209 had a high total protein, and cases 462, 569, 156, and 265 were slightly above normal; cases 234 and 717 had a high calcium content; case 569 had a low calcium content; and case 234 had a high inorganic phosphorus content.)

A very wide range of diffusible calcium was found in the patients' sera; the largest quantity was 6.3 milligrams, while the smallest was 4.0 milligrams per 100 cubic centimeters of serum. The per cent of calcium that was diffusible ranged between 34 and 60. The non-diffusible calcium ranged between 3.8 milligrams and 9.9 milligrams per 100 cubic centimeters of serum.

In the controls the quantity of diffusible calcium ranged between 5.3 milligrams and 5.5 milligrams per 100 cubic centimeters of serum, and the per cent of diffusible calcium was between 48.5 and 56.1. The nondiffusible calcium ranged between 4.4 milligrams and 5.6 milligrams per 100 cubic centimeters of serum.

The globulins and albumin-globulin ratio fluctuated within comparatively wide limits in the patients' sera, the globulins ranging from 1.88 to 6.76 per cent. The albumin-globulin ratio was between 1:0.5 and 1:3.1. In the controls the globulins ranged from 1.66 to 2.31 per cent, and the albumin-globulin ratio from 1:2.1 to 1:3.2.

Of the Wassermanns, 23 were negative, 20 positive, and 3 were not determined.

The duration of leprosy ranged from 8 months to 19 years.

TABLE 4.—*Stage of activity values taken from Tables 2 and 3*

	Pro- teins, per cent	Albu- min, per cent	Globu- lin, per cent	Ratio, albumin globulin	Calcium, total, mg. per 100 c. c. serum	Calcium, diffusible, mg per 100 c. c. serum	Diffusi- ble cal- cium, per cent	Nondif- fusible calcium, mg per 100 c. c. serum	Phos- phorus, mg per 100 c. c. serum
16 PATIENTS SHOWING IMPROVEMENT									
Minimum.....	6.20	3.43	1.95	1:0.9	8.7	4.1	38.6	3.8	2.6
Average.....	7.27	4.20	3.06	1:1.3	10.3	5.0	48.5	5.3	3.3
Maximum.....	8.96	5.25	4.34	1:2.1	11.0	6.3	60.0	6.5	4.5
14 PATIENTS THAT ARE STATIONARY									
Minimum.....	6.56	3.12	2.00	1:0.7	9.4	4.0	34.8	4.4	1.7
Average.....	8.50	4.80	3.71	1:1.2	10.4	4.8	46.1	5.4	3.1
Maximum.....	11.56	5.93	6.76	1:2.5	11.5	5.6	56.0	7.5	4.5
16 PATIENTS SHOWING RETROGRESSION									
Minimum.....	6.25	2.80	1.88	1:0.5	9.3	4.2	34.0	4.3	2.3
Average.....	7.71	3.96	3.75	1:1.0	10.9	4.7	43.1	6.2	3.5
Maximum.....	10.31	5.93	5.63	1:3.1	12.1	6.2	56.3	9.9	7.1

Table 4 gives the minimum, average, and maximum findings in the patients showing improvement, remaining stationary, and showing retrogression. The results show variations between the groups into which the cases have been divided. In the lepers showing retrogression the average findings reveal an abnormally low albumin-globulin ratio, with a corresponding decrease in the percentage of diffusible calcium. In the cases that are stationary, the average albumin-globulin ratio is higher, as is also the diffusible calcium. In those cases showing improvement the average albumin-globulin ratio and diffusible calcium were found to be highest.

In general, it appeared that clinical improvement was coincident with a decrease in globulins and the nondiffusible calcium, with an increase in the diffusible calcium and a higher albumin-globulin ratio. The globulins were higher and the diffusible calcium and albumin-globulin ratio were lowest in severe cases, or in those showing retrogression.

#### DISCUSSION

Many theories have been advanced by various investigators, but few agree as to the cause of muscular and bone changes in leprosy; all are of the opinion, however, that the constant inflammation and infiltration of nerves interfere with nerve function. This appears logical; but, too, our results would seem to show that this constant inflammation, lack of nerve function, muscular and bone changes, may be due in part to a lack of transference to the tissues, of the functionally available and diffusible calcium, which we have found

deficient in the blood sera of lepers. It is thought that probably the disturbance in the protein balance which we have found by our analysis may in some way affect the degree of diffusibility of the available calcium. It seems evident that clinical manifestations of disordered cell function may result from such abnormalities of cell permeability, which may be dependent upon deviations from the normal balance of calcium ions in the blood and tissue.

The consensus of opinion is that the proteins combine with the calcium to form an un-ionized calcium-protein complex. The question may arise as to which constituent of the serum forms the calcium complex. From our results in leprosy, it would seem that the serum globulin bears some relation to the nondiffusible calcium, since in many of the cases we find, first, a rather high nondiffusible calcium with a high serum globulin and a decrease in the diffusible calcium, and, second, a low nondiffusible calcium with a low serum globulin, and a higher diffusible calcium.

It was found, too, that, according to the stage of activity, in those cases showing an improvement the serum globulin and nondiffusible calcium were lower than in those cases showing retrogression. It would seem from these results that the calcium is bound with the serum globulin as infection increases, to form nonavailable calcium. However, these results should not be construed as demonstrating that all of the nondiffusible calcium is bound to the serum globulin, as the physicochemical system of the blood stream is a complex one, and the conditions existing locally in the tissues must be thoroughly understood before we can have a complete knowledge of the mechanism of the so-called mineral balance in the living organism. It is thought, however, that our results would justify further investigation.

#### SUMMARY

Sera from six normal, healthy young men were examined for total proteins, albumin, globulin, total calcium, diffusible calcium, the per cent of calcium that was diffusible, the nondiffusible calcium, the albumin-globulin ratio, and inorganic phosphorus. Sera from 46 lepers, representing the various types and stages of progression of the disease, were similarly examined, including the use of the complement-fixation test.

The albumin-globulin ratio and the diffusible calcium, as well as the percentage of diffusible calcium, averaged considerably lower in the lepers than in the normal young men; the globulins and nondiffusible calcium averaged higher than in the controls. Three cases showed normal values throughout all determinations as compared with our controls.

A consideration of the results indicates that certain definite changes in the serum proteins and calcium metabolism exist in leprosy, and

suggests that clinical improvement is generally accompanied by a decrease in the percentage of globulin and the nondiffusible calcium, with a corresponding increase in the diffusible calcium and albumin-globulin ratio.

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#### COURT DECISION RELATING TO PUBLIC HEALTH

*Milk laws construed.*—(Massachusetts Supreme Judicial Court; *Commonwealth v. Rapoza*, 178 N. E. 530; decided Dec. 2, 1931.) General Laws, ch. 94, sec. 19, provided in part as follows:

No person, himself or by his servant or agent, shall sell, exchange, or deliver, or have in his custody or possession with intent so to do, or expose or offer for sale or exchange \* \* \* milk from which the cream or a part thereof has been removed. \* \* \*

A penalty was provided for violation. The defendant was found guilty under this section of possessing, with intent to sell as pure milk, milk from which a portion of the cream had been removed. It was his contention that he could not properly be convicted because



he had not received the notice required by General Laws, ch. 94, sec. 37. Such section read, in part, as follows:

No producer of milk shall be liable to prosecution for the reason that the milk produced by him is not of good standard quality \* \* \* unless he shall fail to bring the milk produced by him to the legal standard for milk solids and milk fat within 20 days after written notice that it is below said standard has been sent to him by the officer taking said sample. \* \* \*

In rejecting the defendant's contention, the supreme court pointed out that the offense charged in the instant case was not the failure to produce milk of standard quality but the removal of cream therefrom, and stated that it was apparent that section 37 referred to an entirely distinct and different offense from that set forth in section 19. Section 37 was held not to apply to a case where milk had been watered or where the cream had been removed, a difference being recognized between milk naturally deficient and milk made deficient by dilution. "It is obvious," said the court, "that section 37 has no application to section 19, which refers to a case where milk has been tampered with by adding water or any foreign substance or from which cream has been removed."

## DEATHS DURING WEEK ENDED JANUARY 23, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended January 23, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Jan. 23, 1932	Correspond- ing week, 1931
Policies in force.....	74, 199, 865	75, 130, 099
Number of death claims.....	15, 011	15, 115
Death claims per 1,000 policies in force, annual rate.....	10. 6	10. 5
Death claims per 1,000 policies, first 3 weeks of year, annual rate.....	10. 1	11. 0

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 23, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Jan. 23, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 3 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (83 cities) .....	8,004	11.5	620	4.52	14.5	862	12.2	14.2
Akron.....	40	7.9	5	62	7.9	6	9.1	8.5
Albany.....	33	13.2	1	20	14.5	3	15.5	15.5
Atlanta.....	72	13.3	7	68	13.9	12	15.9	15.3
White.....	39	10.9	3	44	11.9	6	12.0	13.0
Colored.....	33	18.0	4	115	17.9	6	23.7	19.8
Baltimore.....	241	15.4	17	60	15.9	13	15.0	15.3
White.....	188	14.7	13	59	15.0	7	14.2	14.2
Colored.....	53	18.4	4	64	19.9	6	18.4	19.9
Birmingham.....	50	9.4	2	21	15.9	2	12.1	15.0
White.....	15	4.6	0	0	14.1	2	8.6	11.1
Colored.....	35	17.4	2	54	18.8	0	17.7	21.5
Boston.....	215	14.3	21	63	17.9	18	15.3	16.4
Bridgeport.....	40	14.2	3	53	13.1	1	13.8	13.9
Buffalo.....	144	12.7	11	53	14.4	20	13.3	14.2
Cambridge.....	26	11.9	3	62	13.7	3	14.9	12.9
Camden.....	39	17.1	7	123	17.1	5	15.6	16.4
Canton.....	20	9.7	4	100	11.7	2	10.6	11.4
Chicago.....	646	9.6	56	55	11.6	73	10.7	11.3
Cincinnati.....	141	16.0	10	64	15.5	16	15.7	18.8
Cleveland.....	190	10.8	16	52	10.4	20	11.3	11.1
Columbus.....	81	14.1	5	50	14.1	5	15.8	14.2
Dallas.....	60	11.1	5	13	13.6	6	11.4	13.7
White.....	51	11.4	4	11	11.8	4	10.4	12.6
Colored.....	9	9.7	1	2	22.0	2	16.5	19.1
Dayton.....	49	10.8	3	43	11.9	7	11.2	13.1
Denver.....	89	15.8	3	29	16.6	7	19.8	16.9
Des Moines.....	22	7.9	0	0	13.0	4	10.1	13.2
Detroit.....	269	8.2	30	54	8.3	22	8.5	8.6
Duluth.....	20	10.3	0	0	14.3	1	9.4	13.8
El Paso.....	35	17.1	7	22	22.8	10	16.0	22.2
Erie.....	19	8.3	1	21	12.8	2	10.5	11.8
Fall River.....	26	11.8	3	60	10.0	5	12.4	12.5
Flint.....	25	7.7	2	29	8.6	4	7.5	8.0
Fort Worth.....	29	8.9	0	12	12.1	6	10.5	13.2
White.....	25	9.1	0	11	11.5	6	9.3	12.1
Colored.....	4	7.8	0	1	15.3	0	17.0	18.5
Grand Rapids.....	17	5.1	1	17	12.1	10	7.0	10.0
Houston.....	72	11.6	10	12	12.8	8	11.7	12.8
White.....	57	12.6	9	9	9.9	7	10.8	12.1
Colored.....	15	9.1	1	20	7.7	1	14.2	14.9
Indianapolis.....	117	16.3	8	65	12.8	4	14.5	14.2
White.....	101	16.1	8	74	12.4	4	13.9	13.7
Colored.....	16	18.1	0	0	16.2	0	18.9	18.1
Jersey City.....	58	9.5	4	33	16.8	12	11.0	13.8
Kansas City, Kans.....	29	12.2	3	66	16.5	4	13.5	16.1
White.....	19	9.9	2	54	14.2	3	12.2	14.3
Colored.....	10	22.1	1	128	26.6	1	19.1	23.7
Kansas City, Mo.....	116	14.6	11	124	13.6	10	11.8	14.6
Knoxville.....	27	12.6	1	25	17.7	3	12.0	16.2
White.....	22	12.3	1	28	15.4	3	11.2	14.3
Colored.....	5	14.3	0	0	29.3	0	16.2	28.4
Long Beach.....	34	11.0	1	26	11.3	2	11.1	10.8
Los Angeles.....	343	13.0	11	33	12.9	30	12.9	13.7
Louisville.....	75	12.7	9	82	18.1	3	14.6	20.0
White.....	54	10.8	5	62	14.4	2	13.1	17.6
Colored.....	21	23.0	4	298	38.3	1	22.6	32.8
Lowell.....	26	13.6	3	78	18.7	4	13.9	15.1
Lynn.....	17	8.6	0	0	11.2	1	11.2	13.6
Memphis.....	92	18.3	13	142	20.3	20	17.9	18.0
White.....	46	14.8	5	85	17.6	9	13.3	15.7
Colored.....	46	23.9	8	241	24.8	11	25.4	21.8
Miami.....	35	16.1	2	86	9.3	1	15.0	11.8
White.....	23	13.6	1	39	7.2	0	13.8	11.4
Colored.....	12	24.8	1	101	16.5	1	19.8	11.0

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 23, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 23, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 3 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Milwaukee.....	106	9.2	7	33	10.3	16	9.6	10.3
Minneapolis.....	80	8.7	7	46	12.0	15	9.3	12.5
Nashville <sup>4</sup> .....	36	12.0	3	45	15.1	4	13.1	16.5
White.....	26	11.9	3	59	13.0	3	12.8	14.2
Colored.....	10	12.2	0	0	20.7	1	13.8	22.7
New Bedford <sup>5</sup> .....	25	11.6	2	58	12.0	4	12.1	13.3
New Haven.....	35	11.2	4	80	16.3	3	13.2	13.6
New Orleans <sup>6</sup> .....	132	14.5	11	63	20.7	14	15.6	21.2
White.....	81	12.6	5	44	16.0	8	13.4	17.7
Colored.....	51	19.4	6	98	32.5	6	21.2	29.7
New York.....	1,385	10.0	123	55	16.6	176	11.0	15.4
Bronx Borough.....	203	7.7	14	40	12.3	28	8.5	11.0
Brooklyn Borough.....	461	9.0	44	49	15.4	68	9.8	14.5
Manhattan Borough.....	533	15.7	50	71	24.6	58	16.9	23.3
Queens Borough.....	145	6.3	12	50	11.3	21	7.1	10.3
Richmond Borough.....	43	13.4	3	59	14.7	1	14.9	14.5
Newark, N. J.....	75	8.7	6	33	13.6	8	10.4	13.3
Oakland.....	62	10.8	2	25	12.1	7	11.8	13.7
Oklahoma City.....	44	11.2	9	123	11.4	7	11.1	11.9
Omaha.....	50	11.9	4	45	13.5	4	12.4	14.3
Paterson.....	41	15.4	5	91	12.4	2	15.4	14.3
Peoria.....	23	10.8	0	0	15.4	2	11.3	16.4
Philadelphia.....	456	12.0	29	45	19.3	44	12.8	17.1
Pittsburgh.....	163	12.5	13	59	16.9	26	13.6	16.7
Portland, Oreg.....	71	11.9	2	26	14.3	0	13.5	14.6
Providence.....	62	12.6	5	48	14.5	11	16.4	15.1
Richmond <sup>6</sup> .....	43	12.1	3	45	17.0	6	15.5	16.6
White.....	31	12.2	2	45	11.9	1	13.7	13.2
Colored.....	12	11.9	1	46	29.6	5	20.1	25.0
Rochester.....	83	13.0	7	67	13.2	4	12.6	13.1
St. Louis.....	218	13.7	5	18	16.9	21	15.1	16.6
St. Paul.....	45	10.3	4	43	10.0	3	9.8	11.0
Salt Lake City <sup>4</sup> .....	33	11.9	0	0	11.7	1	11.9	13.2
San Antonio.....	54	11.4	3	---	16.9	16	13.8	16.4
San Diego.....	67	21.5	2	43	16.7	4	17.6	16.9
San Francisco.....	176	13.9	3	21	16.3	10	14.6	15.2
Schenectady.....	28	15.2	2	58	11.9	2	11.6	9.6
Seattle.....	82	11.4	5	50	11.4	6	11.9	13.5
Somerville.....	16	7.9	1	40	8.9	1	10.7	10.7
South Bend.....	20	9.4	2	58	11.1	3	8.8	7.6
Spokane.....	22	9.8	1	27	15.7	2	13.0	14.6
Springfield, Mass.....	33	11.2	4	67	14.0	4	12.6	11.9
Syracuse.....	65	15.7	3	39	12.7	6	13.2	12.7
Tacoma.....	28	13.5	3	83	15.5	1	11.2	14.3
Tampa <sup>6</sup> .....	27	13.1	2	57	18.9	2	11.9	17.7
White.....	17	10.4	1	35	19.5	2	10.6	16.6
Colored.....	10	22.9	1	158	16.4	0	18.8	21.9
Toledo.....	72	12.5	5	54	14.2	6	11.9	12.6
Trenton.....	31	13.1	1	20	13.9	2	15.3	17.7
Utica.....	37	18.8	1	28	19.4	1	16.8	18.2
Washington, D. C. <sup>4</sup> .....	143	15.1	13	73	18.9	13	15.6	18.7
White.....	94	13.8	6	49	16.6	6	14.0	16.4
Colored.....	49	18.7	7	125	25.1	7	19.8	24.8
Waterbury.....	21	10.8	2	66	12.4	3	9.1	9.3
Wilmington, Del. <sup>7</sup> .....	25	12.3	3	68	14.7	6	14.7	14.7
Worcester.....	43	11.3	7	96	15.6	4	12.9	15.2
Yonkers.....	13	4.8	1	26	10.9	2	7.4	11.0
Youngstown.....	45	13.4	6	97	9.3	5	10.6	11.3

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 33; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 33; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended January 30, 1932, and January 31, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 30, 1932, and January 31, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931
<b>New England States:</b>								
Maine.....	6	1	459	26	654	48	1	0
New Hampshire.....	1	1	-----	10	30	141	0	0
Vermont.....	-----	-----	-----	-----	197	12	0	0
Massachusetts.....	66	93	35	307	319	588	0	2
Rhode Island.....	11	7	1	21	787	1	0	0
Connecticut.....	6	11	3	176	179	242	1	0
<b>Middle Atlantic States:</b>								
New York.....	142	133	139	1,046	1,200	418	6	31
New Jersey.....	32	81	16	967	115	525	5	7
Pennsylvania.....	160	128	-----	-----	1,589	1,441	10	9
<b>East North Central States:</b>								
Ohio.....	159	120	60	72	500	250	5	8
Indiana.....	53	44	57	68	106	314	12	6
Illinois.....	129	153	52	480	75	886	8	6
Michigan.....	46	53	11	16	223	185	2	5
Wisconsin.....	18	35	19	111	181	335	3	2
<b>West North Central States:</b>								
Minnesota.....	11	15	1	-----	21	56	0	0
Iowa.....	19	13	-----	-----	4	3	0	3
Missouri.....	55	54	4	86	38	830	5	7
North Dakota.....	1	1	-----	-----	5	25	0	2
South Dakota.....	10	31	3	-----	61	8	0	0
Nebraska.....	10	13	46	20	21	12	0	1
Kansas.....	47	11	16	13	43	46	2	4
<b>South Atlantic States:</b>								
Delaware.....	4	1	-----	82	1	8	0	0
Maryland.....	55	26	25	3,148	34	301	2	0
District of Columbia.....	18	11	1	52	-----	27	2	3
Virginia.....	-----	-----	-----	-----	-----	-----	-----	3
West Virginia.....	28	15	58	173	270	36	0	0
North Carolina.....	47	33	30	1,764	146	150	3	0
South Carolina.....	17	12	508	2,873	28	24	0	0
Georgia.....	21	10	84	323	5	52	1	1
Florida.....	13	3	2	46	9	65	0	0

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Jan. 30, 1932, 2 cases in North Carolina.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended January 30, 1932, and January 31, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931
<b>East South Central States:</b>								
Kentucky.....	39	19	---	---	84	170	3	7
Tennessee.....	31	8	78	186	13	64	2	6
Alabama.....	24	24	72	305	5	529	2	6
Mississippi.....	20	21	---	---	---	---	1	6
<b>West South Central States:</b>								
Arkansas.....	7	3	27	156	2	1	0	1
Louisiana.....	46	49	19	117	20	2	1	7
Oklahoma *.....	24	43	105	236	119	31	0	0
Texas.....	131	27	72	107	21	148	0	2
<b>Mountain States:</b>								
Montana.....	1	---	265	---	80	4	1	1
Idaho.....	---	---	---	5	1	1	0	1
Wyoming.....	---	1	4	1	2	---	0	1
Colorado.....	11	11	---	---	14	107	1	4
New Mexico.....	13	6	3	6	21	38	0	0
Arizona.....	---	6	32	10	2	72	2	3
Utah *.....	---	---	---	6	1	3	1	1
<b>Pacific States:</b>								
Washington.....	8	10	---	---	383	67	0	3
Oregon.....	2	11	121	48	23	78	0	0
California.....	66	57	225	185	319	509	4	4

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931
<b>New England States:</b>								
Maine.....	0	1	32	37	0	0	4	3
New Hampshire.....	0	0	30	1	0	1	2	0
Vermont.....	0	0	7	2	6	6	0	0
Massachusetts.....	0	1	499	375	3	0	3	4
Rhode Island.....	0	0	45	29	0	0	0	0
Connecticut.....	0	0	102	44	6	0	1	0
<b>Middle Atlantic States:</b>								
New York.....	7	1	965	743	4	3	21	7
New Jersey.....	1	0	220	292	0	0	5	1
Pennsylvania.....	0	1	617	656	0	1	23	11
<b>East North Central States:</b>								
Ohio.....	2	4	538	799	49	87	12	9
Indiana.....	0	1	117	402	25	105	1	3
Illinois.....	5	4	432	524	5	66	0	3
Michigan.....	2	1	331	45	3	53	10	7
Wisconsin.....	2	1	111	125	0	7	0	5
<b>West North Central States:</b>								
Minnesota.....	0	1	105	66	2	10	2	7
Iowa.....	0	2	67	150	81	55	2	0
Missouri.....	0	2	88	230	20	25	2	3
North Dakota.....	0	0	18	49	11	11	1	2
South Dakota.....	0	0	13	17	14	36	2	1
Nebraska.....	1	1	36	52	5	62	1	0
Kansas.....	0	1	67	56	3	100	2	1
<b>South Atlantic States:</b>								
Delaware.....	0	0	16	33	0	0	0	0
Maryland *.....	1	0	129	112	0	0	4	5
District of Columbia.....	0	0	18	26	0	0	0	1
Virginia.....	1	---	---	---	---	---	---	---
West Virginia.....	0	0	51	34	1	11	12	7
North Carolina *.....	0	2	55	78	5	2	14	3
South Carolina.....	0	1	12	15	0	0	12	11
Georgia.....	0	0	17	60	0	0	11	3
Florida.....	0	0	4	14	2	0	2	1

\* Week ended Friday.

\* Typhus fever, week ended Jan. 30, 1932; 2 cases in North Carolina.

\* Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 30, 1932, and January 31, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931	Week ended Jan. 30, 1932	Week ended Jan. 31, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	108	150	4	16	23	8
Tennessee.....	0	0	62	39	16	5	17	5
Alabama.....	0	0	34	73	18	3	8	7
Mississippi.....	1	1	15	22	27	11	5	4
<b>West South Central States:</b>								
Arkansas.....	0	0	3	10	3	9	1	5
Louisiana.....	1	0	17	31	3	9	14	1
Oklahoma <sup>1</sup> .....	1	2	35	47	78	117	23	12
Texas.....	0	0	62	46	16	24	12	6
<b>Mountain States:</b>								
Montana.....	1	0	49	45	0	2	0	1
Idaho.....	0	0	7	10	2	1	0	2
Wyoming.....	0	0	11	26	0	0	1	0
Colorado.....	1	1	38	45	6	6	0	2
New Mexico.....	1	0	11	13	3	2	1	4
Arizona.....	0	1	8	10	0	0	1	2
Utah <sup>1</sup> .....	1	0	9	13	0	0	0	1
<b>Pacific States:</b>								
Washington.....	0	0	45	51	12	19	2	1
Oregon.....	0	0	30	27	8	38	1	1
California.....	1	6	123	160	8	128	1	7

<sup>1</sup> Week ended Friday.

<sup>1</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Men-ingo-coccus menin-gitis	Diph-theria	Influ-enza	Ma-laria	Mea-sles	Pel-lagra	Pollo-mye-litis	Scarlet fever	Small-pox	Ty-phoid fever
<i>November, 1931</i>										
Hawaii Territory.....	1	13	2		108				0	10
<i>December, 1931</i>										
California.....	25	438	532	4	746	5	20	687	39	35
Louisiana.....	5	155	50	46	22	34	1	94	6	98
Montana.....	2	4	14		541		5	162	18	4
Nevada.....		1	1				0	8	0	0
New York.....	33	571			1,995		66	2,133	59	99
Oklahoma <sup>1</sup> .....	4	319	150	40	13	7	2	181	7	47
Oregon.....		6	146		30		1	67	41	10
South Carolina.....		170	1,520	612	89	98	1	46	0	37
South Dakota.....		37	10		275		1	61	44	14
Texas.....	3	653	78	426		1	3	303		52
Virginia.....	3	738	1,097	9	185	14	3	557	8	98
Washington.....	8	84	54		524		5	195	91	12
Wisconsin.....	7	94	102		229		9	385	43	6

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

<i>November, 1931</i>		<i>December, 1931</i>	
Hawaii Territory:	Cases	Actinomycosis:	Cases
Chicken pox.....	13	California.....	1
Conjunctivitis, follicular.....	325	Anthrax: <sup>1</sup>	
Dysentery (bacillary).....	3	New York.....	1
Hookworm disease.....	26	Chicken pox:	
Leprosy.....	6	California.....	1,608
Mumps.....	5	Louisiana.....	6
Tetanus.....	3	Montana.....	180
Trachoma.....	101	Nevada.....	7
Whooping cough.....	8	New York.....	2,199

<sup>1</sup> Later report from California states case reported in November, published in Public Health Reports dated Jan. 15, 1932, p. 153, was not anthrax.

Chicken pox—Continued.	Cases	Mumps—Continued.	Cases
Oklahoma <sup>1</sup> .....	63	South Dakota.....	41
Oregon.....	217	Virginia.....	60
South Carolina.....	107	Wisconsin.....	860
South Dakota.....	152	Ophthalmia neonatorum:	
Virginia.....	508	New York.....	8
Washington.....	515	South Carolina.....	10
Wisconsin.....	1,772	South Dakota.....	3
Dengue:		Paratyphoid fever:	
Louisiana.....	1	California.....	5
South Carolina.....	2	New York.....	6
Diarrhea:		South Carolina.....	1
South Carolina.....	330	Texas.....	3
Diarrhea and dysentery:		Puerperal septicemia:	
Virginia.....	93	New York.....	10
Dysentery:		South Dakota.....	1
California (amoebic).....	9	Washington.....	1
California (bacillary).....	13	Rabies in animals:	
Louisiana.....	3	California.....	80
Montana.....	1	Louisiana.....	4
New York.....	19	New York <sup>1</sup> .....	2
Oklahoma <sup>1</sup> .....	5	South Carolina.....	15
Oregon.....	1	Scabies	
Food poisoning:		Montana.....	2
California.....	7	Oklahoma <sup>1</sup> .....	12
German measles:		Oregon.....	53
California.....	29	Washington.....	11
Montana.....	4	Septic sore throat:	
New York.....	77	California.....	7
Washington.....	12	Louisiana.....	3
Wisconsin.....	20	Montana.....	7
Giardia enterica:		New York.....	23
Montana.....	2	Oklahoma <sup>1</sup> .....	36
Granuloma, coccidioidal:		Oregon.....	9
California.....	1	South Carolina.....	7
Hookworm disease:		South Dakota.....	1
Louisiana.....	36	Tetanus:	
South Carolina.....	63	California.....	4
Impetigo contagiosa:		Louisiana.....	5
Montana.....	3	New York.....	8
Oklahoma <sup>1</sup> .....	1	South Dakota.....	1
Oregon.....	102	Trachoma	
Washington.....	9	California.....	7
Jaundice:		Louisiana.....	1
California.....	1	New York.....	1
Leprosy.		Oklahoma <sup>1</sup> .....	3
California.....	1	South Dakota.....	1
Louisiana.....	4	Trichinosis	
Lethargic encephalitis:		New York.....	2
California.....	2	Tularaemia.	
New York.....	6	California.....	1
Oregon.....	1	Oklahoma <sup>1</sup> .....	1
Washington.....	4	Virginia.....	18
Wisconsin.....	1	Wisconsin.....	3
Mumps:		Typhus fever.	
California.....	463	California.....	2
Louisiana.....	1	New York.....	3
Montana.....	10	South Carolina.....	6
Nevada.....	3	Undulant fever:	
New York.....	575	California.....	8
Oklahoma <sup>1</sup> .....	19	Louisiana.....	2
Oregon.....	84	New York.....	23
South Carolina.....	83	Oregon.....	1

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.<sup>2</sup> Exclusive of New York City.

Undulant fever—Continued.	Cases	Whooping cough—Continued.	Cases
Virginia.....	3	Montana.....	48
Washington.....	6	Nevada.....	20
Wisconsin.....	3	New York.....	1,652
Vincent's angina:		Oklahoma <sup>1</sup> .....	25
Montana.....	1	Oregon.....	22
New York <sup>1</sup> .....	59	South Carolina.....	47
Oklahoma <sup>1</sup> .....	2	South Dakota.....	51
Oregon.....	18	Virginia.....	805
Whooping cough:		Washington.....	48
California.....	457	Wisconsin.....	840
Louisiana.....	21		

### ADMISSIONS TO HOSPITALS FOR THE INSANE, JANUARY, 1930

Reports for the month of January, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 117 hospitals, located in 39 States, the District of Columbia, and the Territory of Hawaii. The 117 hospitals had 184,913 patients on January 31, 1930, 98,836 males and 86,077 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of January, 1930:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	20	2	22
2. Senile psychoses.....	181	116	297
3. Psychoses with cerebral arteriosclerosis.....	188	90	278
4. General paralysis.....	211	69	280
5. Psychoses with cerebral syphilis.....	31	7	38
6. Psychoses with Huntington's chorea.....	3	0	3
7. Psychoses with brain tumor.....	3	0	3
8. Psychoses with other brain or nervous disease.....	22	11	33
9. Alcoholic psychoses.....	159	15	174
10. Psychoses due to drugs and other exogenous toxins.....	20	8	28
11. Psychoses with pellagra.....	11	12	23
12. Psychoses with other somatic diseases.....	32	39	71
13. Manic-depressive psychoses.....	208	245	453
14. Involution melancholia.....	12	49	61
15. Dementia praecox (schizophrenia).....	438	305	743
16. Paranoia and paranoid conditions.....	33	34	67
17. Epileptic psychoses.....	52	25	77
18. Psychoneuroses and neuroses.....	27	33	60
19. Psychoses with psychopathic personality.....	17	10	27
20. Psychoses with mental deficiency.....	63	48	111
21. Undiagnosed psychoses.....	141	91	232
22. Without psychosis.....	187	65	252
Total.....	2,059	1,274	3,333

During the month of January, 1930, there were 3,333 new admissions to the hospitals, 61.8 per cent of these new admissions being males and 38.2 per cent females, the ratio being 162 males per 100 females. Of the new admissions, 484 were reported as being undiagnosed or "without psychosis." There were 2,849 new admissions for which provisional diagnoses were made. Of these 2,849 patients, cases of dementia praecox constituted 26.1 per cent; manic-depres-

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

<sup>2</sup> Exclusive of New York City.



sive psychoses, 15.9 per cent; senile psychoses, 10.4 per cent; general paralysis, 9.8 per cent, and psychoses with cerebral arteriosclerosis, 9.8 per cent. These five classes accounted for 72 per cent of the new admissions for which diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on January 31, 1930:

	Number of patients on books		
	Male	Female	Total
Patients on books last day of month:			
In hospitals.....	89,265	78,694	167,959
On parole or otherwise absent, but still on books.....	9,571	7,383	16,954
Total.....	98,836	86,077	184,913

Of the 184,913 patients, 9,571 males and 7,383 females were on parole at the end of the month—9.7 per cent of the males, 8.6 per cent of the females, and 9.2 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 95 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,805,000. The estimated population of the 88 cities reporting deaths is more than 32,246,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended January 23, 1932, and January 24, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1,627	1,335	
95 cities.....	632	506	886
Measles			
46 States.....	7,230	7,992	
95 cities.....	2,248	2,491	
Meningococcus meningitis			
46 States.....	71	132	
95 cities.....	37	58	
Poliomyelitis: 46 States.....	39	47	
Scarlet fever:			
46 States.....	5,055	5,453	
95 cities.....	1,947	2,133	1,516
Smallpox:			
46 States.....	603	990	
95 cities.....	33	103	54
Typhoid fever:			
46 States.....	255	148	
95 cities.....	47	40	34
<i>Deaths reported</i>			
Influenza and pneumonia: 88 cities.....	806	1,712	
Smallpox:			
88 cities.....	1	0	
Little Rock, Ark.....	1	0	

## City reports for week ended January 23, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	2	1	0		0	197	1	8
New Hampshire:								
Concord	0	0	0		0	0	0	2
Manchester	0	1	0		0	0	0	3
Nashua	1	0	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	0	0
Burlington	4	1	0		0	50	3	0
Massachusetts:								
Boston	61	34	17	4	0	15	30	14
Fall River	10	4	1		0	9	1	1
Springfield	13	5	0		0	4	16	5
Worcester	13	5	1		0	1	60	3
Rhode Island:								
Pawtucket	0	1	0		0	0	0	0
Providence	19	8	2		1	634	22	2
Connecticut:								
Bridgeport	9	5	0	1	2	0	0	5
Hartford		5						
New Haven	12	1	0	1	0	0	21	2
MIDDLE ATLANTIC								
New York:								
Buffalo	33	12	6		2	8	0	20
New York	211	203	151	29	8	28	75	160
Rochester	9	6	1		0	78	12	7
Syracuse	20	2	0		0	45	11	5
New Jersey:								
Camden	4	5	1		0	1	0	7
Newark	68	17	4		0	2	19	5
Trenton	1	2	0	1	0	1	6	1
Pennsylvania:								
Philadelphia	124	66	10	7	7	3	35	43
Pittsburgh	56	18	12	3	1	182	66	22
Reading	15	2	0		0	0	1	5
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	4	8	9		3	0	0	13
Cleveland	158	30	7	14	1	181	135	17
Columbus	8	3	13		2	1	0	9
Toledo	51	6	2	1	1	1	2	6
Indiana:								
Fort Wayne	3	4	11		0	0	0	7
Indianapolis	44	6	3		2	0	46	11
South Bend	6	1	0		0	0	0	0
Terre Haute	2	0	1		0	0	0	0
Illinois:								
Chicago	109	98	63	27	2	54	13	45
Springfield	2	1	1		0	0	2	2

## City reports for week ended January 23, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL—continued								
Michigan:								
Detroit.....	84	49	46	10	5	27	9	18
Flint.....	18	3	1		0	21	45	1
Grand Rapids.....	7	1	0		1	51	2	1
Wisconsin:								
Kenosha.....	7	1	1		0	0	1	1
Madison.....	8	1	0		0	1	2	2
Milwaukee.....	87	15	4	1	1	23	34	6
Racine.....	24	1	3		0	2	08	0
Superior.....	1	1	0		0	1	6	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	6	0	0		0	1	0	2
Minneapolis.....	29	15	6		0	2	25	8
St. Paul.....	21	4	0		0	1	1	6
Iowa:								
Davenport.....	0	1	0			0	1	
Des Moines.....	0	1	4			0	0	
Sioux City.....	5	0	4			0	0	
Waterloo.....	5	0	0			0	1	
Missouri:								
Kansas City.....	18	6	15		1	0	4	9
St. Joseph.....	3	2	1		0	0	1	6
St. Louis.....	14	41	9	1	0	2	0	11
North Dakota:								
Fargo.....	5	0	0		0	25	0	0
Grand Forks.....	1	1	0			3	0	
South Dakota:								
Aberdeen.....	5	0	0			10	0	
Sioux Falls.....	0	1	0			0	0	
Nebraska:								
Omaha.....	7	4	5		0	1	6	8
Kansas:								
Topeka.....	16	2	1		1	0	2	0
Wichita.....	40	2	13		0	47	1	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	3	2	1		0	1	0	5
Maryland:								
Baltimore.....	104	22	11	16	4	2	52	29
Cumberland.....	1	1	0		0	0	0	2
Frederick.....	0	0	1		0	3	1	0
District of Columbia:								
Washington.....	20	17	19	1	0	3	0	12
Virginia:								
Lynchburg.....	9	1	1		0	0	0	1
Norfolk.....	10	2	4		0	0	0	4
Richmond.....	3	5	8		3	0	0	5
Roanoke.....	7	1	3		0	0	2	0
West Virginia:								
Charleston.....	6	2	2		0	9	0	0
Huntington.....	0		4		0	1	0	0
Wheeling.....	0	1	0		0	0	1	3
North Carolina:								
Raleigh.....	3	1	1		0	34	0	2
Wilmington.....	0	1	0		0	0	0	2
Winston Salem.....	17	1	2		0	0	3	3
South Carolina:								
Charleston.....	0	1	0	27	0	0	0	2
Columbia.....	0	0	0		0	1	0	8
Greenville.....	1	0	0			0	2	
Georgia:								
Atlanta.....	3	4	5	36	1	2	0	14
Brunswick.....	0	0	0		0	0	0	1
Savannah.....	1	2	0	12	3	1	0	4
Florida:								
Miami.....	1	2	4		0	1	0	2
Tampa.....	0	2	1		1	0	1	2

## City reports for week ended January 23, 1933—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	2	1	0	0	0	0	1	1
Lexington.....	0		5	0	0	0	5	0
Tennessee:								
Memphis.....	4	4	9	3	1	0	9	1
Nashville.....	3	1	0	1	0	0	0	1
Alabama:								
Birmingham.....	3	3	4	3	2	1	2	4
Mobile.....	0	1	1	1	1	0	0	2
Montgomery.....	2	1	1	2		1	4	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	2	0	0		0	0	0	
Little Rock.....	0	1	0	0	0	0	1	2
Louisiana:								
New Orleans.....	0	14	23	3	1	0	0	14
Shreveport.....	0	2	1		0	40	1	5
Oklahoma:								
Tulsa.....	7	2	3			0	1	
Texas:								
Dallas.....	10	8	26		0	9	0	7
Fort Worth.....	6	5	5		0	2	0	0
Galveston.....	0	1	1		0	0	0	1
Houston.....	0	9	25		2	0	0	13
San Antonio.....	1	3	3		1	0	0	7
MOUNTAIN								
Montana:								
Billings.....	3	0	0		0	17	0	0
Great Falls.....	0	0	0		0	0	0	0
Helena.....	0	0	0		0	37	0	0
Missoula.....	0	0	0		0	0	0	0
Idaho:								
Boise.....		0						
Colorado:								
Denver.....	18	8	8		1	3	23	10
Pueblo.....	26	1	0		1	0	0	4
New Mexico:								
Albuquerque.....	11	1	2		0	1	0	1
Arizona:								
Phoenix.....								8
Utah:								
Salt Lake City...	26	3	0		1	1	0	2
Nevada:								
Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	40	3	8			292	10	
Spokane.....	11	2	0			4	0	
Tacoma.....	7	4	1		0	2	1	8
Oregon:								
Portland.....	37	9	1	2	0	26	12	3
Salem.....	3	1	0	3		2	0	
California:								
Los Angeles.....	79	38	37	122	2	4	8	25
Sacramento.....	26	1	3		1	93	3	13
San Francisco.....	56	13	3	15	3	40	2	7

## City reports for week ended January 23, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	3	4	0	0	0	1	0	0	0	3	37
New Hampshire:											
Concord.....	0	6	0	0	0	0	0	0	0	0	10
Manchester.....	2	5	0	0	0	0	0	0	1	0	31
Nashau.....	0	1	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	0	0	0	0	3	0	0	0	0	5
Burlington.....	1	1	-----	1	0	0	0	0	0	0	9
Massachusetts:											
Boston.....	97	154	0	0	0	8	1	1	0	24	215
Fall River.....	4	11	0	0	0	2	0	0	0	0	26
Springfield.....	9	10	0	0	0	0	0	0	0	9	37
Worcester.....	13	31	0	0	0	0	0	0	0	11	43
Rhode Island:											
Pawtucket.....	1	0	0	0	0	0	0	0	0	0	13
Providence.....	16	19	0	0	0	3	0	0	0	19	62
Connecticut:											
Bridgeport.....	10	8	0	3	0	2	1	0	0	0	40
Hartford.....	7	-----	0	-----	-----	-----	0	-----	-----	-----	-----
New Haven.....	7	16	0	0	0	1	0	0	0	15	35
MIDDLE ATLANTIC											
New York:											
Buffalo.....	27	70	0	0	0	6	1	0	0	29	140
New York.....	241	386	0	0	0	76	7	5	1	161	1,385
Rochester.....	11	54	0	0	0	1	0	0	0	2	79
Syracuse.....	15	24	0	0	0	1	1	0	0	78	65
New Jersey:											
Camden.....	7	21	0	0	0	1	0	0	0	3	39
Newark.....	28	27	0	0	0	4	1	0	0	39	76
Trenton.....	5	10	0	0	0	3	0	0	0	0	31
Pennsylvania:											
Philadelphia.....	101	158	0	0	0	18	2	1	0	317	456
Pittsburgh.....	36	64	0	0	0	8	1	3	1	42	163
Reading.....	4	0	0	0	0	3	0	0	0	11	30
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	24	39	1	1	0	6	0	1	0	5	141
Cleveland.....	45	62	1	0	0	11	2	1	0	141	190
Columbus.....	13	12	1	0	0	5	0	0	0	10	81
Toledo.....	15	5	1	0	0	6	0	0	0	62	72
Indiana:											
Fort Wayne.....	6	3	1	0	0	0	0	0	0	2	26
Indianapolis.....	12	10	5	1	0	2	0	0	0	31	-----
South Bend.....	4	3	0	0	0	1	0	0	0	1	20
Terre Haute.....	3	0	0	0	0	1	0	0	0	0	20
Illinois:											
Chicago.....	139	177	1	3	0	33	3	1	0	190	646
Springfield.....	3	5	0	0	0	2	0	0	0	15	27
Michigan:											
Detroit.....	112	142	2	0	0	16	0	2	0	114	269
Flint.....	14	13	1	0	0	0	0	0	1	9	25
Grand Rapids.....	14	7	0	0	0	1	0	0	0	3	17
Wisconsin:											
Kenosha.....	3	9	0	0	0	0	0	0	0	1	10
Madison.....	4	1	0	0	0	0	0	0	0	5	22
Milwaukee.....	37	41	0	0	0	3	0	0	0	181	106
Racine.....	6	1	0	0	0	0	0	0	0	1	15
Superior.....	3	0	0	0	0	0	0	0	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	11	5	0	0	0	2	0	0	0	0	20
Minneapolis.....	47	26	0	0	0	0	0	0	0	8	80
St. Paul.....	29	14	0	0	0	3	0	0	0	10	61

## City reports for week ended January 23, 1933—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CEN- TRAL—continued											
Iowa:											
Davenport.....	1	16	2	1	—	—	0	0	—	0	—
Des Moines.....	8	5	2	0	—	—	0	0	—	0	22
Sioux City.....	1	3	1	5	—	—	0	0	—	4	—
Waterloo.....	1	0	0	0	—	—	0	1	—	9	—
Missouri:											
Kansas City.....	19	22	1	0	0	11	0	0	0	49	116
St. Joseph.....	2	1	0	0	0	1	0	0	0	0	30
St. Louis.....	48	12	1	0	0	12	0	1	0	75	218
North Dakota:											
Fargo.....	3	2	1	0	—	—	0	0	—	0	—
Grand Forks.....	0	0	0	0	—	—	0	0	—	0	—
South Dakota:											
Aberdeen.....	0	1	0	4	—	—	0	0	—	4	—
Sioux Falls.....	1	0	0	1	—	—	0	0	—	0	5
Nebraska:											
Omaha.....	7	4	2	2	0	2	0	0	0	0	50
Kansas:											
Topeka.....	3	3	1	0	0	0	0	0	0	23	10
Wichita.....	4	3	0	0	0	1	0	0	0	1	36
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	7	8	0	0	0	1	0	0	1	6	25
Maryland:											
Baltimore.....	35	33	0	0	0	13	1	0	0	178	241
Cumberland.....	1	3	0	0	0	1	0	0	0	0	18
Frederick.....	0	2	0	0	0	0	0	0	0	6	4
District of Colum- bia:											
Washington.....	26	21	1	0	0	6	1	3	0	21	148
Virginia:											
Lynchburg.....	1	2	0	0	0	0	0	0	0	5	18
Norfolk.....	3	5	0	0	0	0	0	1	0	2	—
Richmond.....	7	16	0	0	0	7	0	0	0	0	45
Roanoke.....	2	8	1	0	0	0	0	0	0	1	19
West Virginia:											
Charleston.....	2	3	0	0	0	2	0	1	0	2	13
Huntington.....	—	2	—	0	0	0	—	0	0	0	0
Wheeling.....	3	3	0	0	0	0	0	0	0	1	13
North Carolina:											
Raleigh.....	1	1	1	0	0	0	0	0	0	5	15
Wilmington.....	0	2	0	0	0	0	0	0	0	23	12
Winston-Salem.....	3	1	1	0	0	0	0	3	0	19	12
South Carolina:											
Charleston.....	1	0	0	0	0	0	0	0	0	0	17
Columbia.....	0	0	0	0	0	1	0	0	1	0	37
Greenville.....	—	1	0	0	—	—	—	0	—	3	—
Georgia:											
Atlanta.....	5	7	0	0	0	3	0	0	0	2	72
Brunswick.....	0	0	0	0	0	0	0	0	0	0	6
Savannah.....	1	1	0	0	0	0	1	3	0	1	45
Florida:											
Miami.....	0	0	0	0	0	7	0	0	0	2	35
Tampa.....	1	0	0	0	0	1	1	5	0	1	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	4	1	0	0	0	0	0	0	2	17
Lexington.....	—	2	—	0	0	0	—	0	0	1	9
Tennessee:											
Memphis.....	8	9	2	3	0	8	1	0	0	24	92
Nashville.....	2	3	0	0	0	3	0	0	0	4	36
Alabama:											
Birmingham.....	6	1	1	0	0	5	0	0	0	0	50
Mobile.....	2	3	0	1	0	0	0	2	0	0	16
Montgomery.....	2	0	0	0	—	—	1	0	—	0	—

## City reports for week ended January 23, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	0	0	0			0	0		1	
Little Rock.....	2	0	0	0	1	5	0	1	0		
Louisiana:											
New Orleans.....	7	8	0	0	0	10	3	2	2	3	132
Shreveport.....	1	1	0	0	0	3	0	0	0	2	31
Oklahoma:											
Tulsa.....	2	3	0	0			0	0		0	
Texas:											
Dallas.....	7	12	1	0	0	5	0	1	1	4	60
Fort Worth.....	4	4	0	1	0	1	1	0	0	0	29
Galveston.....	1	0	0	0	0	2	0	0	0	0	16
Houston.....	4	3	5	0	0	5	0	2	0	0	72
San Antonio.....	3	1	1	0	0	9	0	1	1	0	54
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	1
Great Falls.....	5	2	1	0	0	0	0	0	0	0	6
Helena.....	0	0	3	0	0	0	0	0	0	0	6
Missoula.....	0	4	0	0	0	0	0	0	0	0	2
Idaho:											
Boise.....	2		0				0				
Colorado:											
Denver.....	14	15	0	0	0	6	0	0	0	7	90
Pueblo.....	2	1	0	0	0	0	1	0	0	2	10
New Mexico:											
Albuquerque.....	1	2	0	0	0	0	0	0	0	0	9
Arizona:											
Phoenix.....	0		0		0	4	0		0		25
Utah:											
Salt Lake City.....	5	6	1	0	0	1	0	0	0	1	33
Nevada:											
Reno.....	0	1	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle.....	12	13	2	1			1	2		5	
Spokane.....	8	0	4	2			0	0		0	
Tacoma.....	4	3	2	0	0	0	0	0	0	2	28
Oregon:											
Portland.....	6	0	8	4	0	1	1	1	0	4	71
Salem.....	0	0		0				0		0	
California:											
Los Angeles.....	41	41	4	6	0	26	2	0	0	14	343
Sacramento.....	2	2	1	0	0	4	0	2	0	0	47
San Francisco.....	22	8	2	5	0	7	1	2	0	1	176

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston.....	0	0	0	0	0	0	1	2	1
Worcester.....	0	0	0	0	0	0	0	2	0
Rhode Island:									
Providence.....	0	0	1	0	0	0	0	0	0

## City reports for week ended January 23, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Polionmyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	2	1	0	2	0	0	1	1	0
Syracuse.....	1	0	0	0	0	0	0	0	0
New Jersey:									
Newark.....	0	0	0	0	0	0	0	1	0
Trenton.....	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	5	2	0	0	0	0	0	0	0
Pittsburgh.....	2	1	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	2	1	0	0	0	0	0	0	0
Columbus.....	1	0	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	5	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	3	0	0	0	0	0	1	1
Michigan:									
Detroit.....	2	1	0	0	0	0	1	1	0
Flint.....	1	1	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	0	0	0	0	0	0	0	0
Racine.....	1	1	1	1	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	0	0	0	0	0	0	0	1	0
Missouri:									
Kansas City.....	1	0	0	1	0	0	0	0	0
St. Louis.....	0	0	1	1	0	0	0	0	0
South Dakota:									
Aberdeen.....	0		0		0		0	1	
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	2	0	0	0	0	0	0	0	0
Cumberland.....	1	1	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Columbia.....	0	0	0	0	0	1	0	0	0
Georgia:									
Savannah.....	1	0	0	0	2	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	0	0	0	0	0	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	0	0	0	1	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	0	0
Houston.....	0	2	0	0	0	0	0	0	0
<b>MOUNTAIN</b>									
New Mexico:									
Albuquerque.....	0	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City.....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	1	1	0	0	0	0	0	0	0
San Francisco.....	1	1	0	0	0	0	1	0	0



The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended January 23, 1932, compared with those for a like period ended January 24, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, December 20, 1931, to January 23, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding period of 1930-31*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 26, 1931	Dec. 27, 1930	Jan. 2, 1932	Jan. 8, 1931	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931
98 cities.....	72	71	<sup>2</sup> 72	80	83	81	<sup>2</sup> 88	74	<sup>2</sup> 98	<sup>2</sup> 79
New England.....	65	75	84	116	79	79	86	91	<sup>2</sup> 55	106
Middle Atlantic.....	57	47	56	68	50	63	82	56	82	67
East North Central.....	60	102	64	91	76	96	<sup>2</sup> 68	95	97	98
West North Central.....	134	54	130	83	131	98	106	82	102	84
South Atlantic.....	90	86	71	62	114	85	94	69	108	<sup>2</sup> 65
East South Central.....	111	84	100	72	162	117	81	70	87	78
West South Central.....	115	143	129	136	204	142	195	108	260	81
Mountain.....	20	62	44	62	121	35	43	52	<sup>2</sup> 72	85
Pacific.....	41	40	<sup>2</sup> 64	55	65	61	97	47	99	88

## MEASLES CASE RATES

98 cities.....	126	181	<sup>2</sup> 191	281	300	351	<sup>2</sup> 278	324	<sup>2</sup> 347	<sup>2</sup> 405
New England.....	945	305	1,207	268	1,706	490	1,906	310	<sup>2</sup> 2,235	522
Middle Atlantic.....	66	70	93	101	146	178	116	158	154	251
East North Central.....	32	27	93	55	142	62	<sup>2</sup> 182	87	215	80
West North Central.....	50	1,277	38	1,894	157	2,156	78	1,829	150	1,984
South Atlantic.....	14	124	79	322	53	435	71	500	110	<sup>2</sup> 608
East South Central.....	17	323	29	921	17	869	6	1,004	17	708
West South Central.....	41	24	64	24	43	20	73	7	162	10
Mountain.....	339	229	513	317	1,172	226	517	374	<sup>2</sup> 518	757
Pacific.....	259	16	<sup>2</sup> 445	24	784	33	544	55	828	78

## SCARLET FEVER CASE RATES

98 cities.....	187	222	<sup>2</sup> 226	231	274	277	<sup>2</sup> 315	316	<sup>2</sup> 301	<sup>2</sup> 334
New England.....	389	353	539	327	549	433	582	539	<sup>2</sup> 673	575
Middle Atlantic.....	205	190	240	229	286	242	390	282	361	314
East North Central.....	227	285	233	261	298	363	<sup>2</sup> 335	398	312	384
West North Central.....	126	246	115	238	229	297	220	321	180	222
South Atlantic.....	107	178	221	262	227	277	239	305	218	<sup>2</sup> 348
East South Central.....	157	341	112	299	225	399	121	470	116	457
West South Central.....	41	59	108	108	69	68	99	129	82	142
Mountain.....	113	379	209	220	336	322	259	331	<sup>2</sup> 259	357
Pacific.....	61	85	<sup>2</sup> 109	73	141	73	129	73	128	120

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Spokane, Wash., not included.

<sup>3</sup> Fort Wayne, Ind., not included.

<sup>4</sup> Hartford, Conn., and Boise, Idaho, not included.

<sup>5</sup> Columbia, S. C., not included.

<sup>6</sup> Hartford, Conn., not included.

<sup>7</sup> Boise, Idaho, not included.

Summary of weekly reports from cities, December 20, 1931, to January 23, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Dec. 26, 1931	Dec 27, 1931	Jan 2, 1932	Jan 3, 1931	Jan 9 1932	Jan 10, 1931	Jan 16, 1932	Jan 17, 1931	Jan. 23, 1932	Jan. 24, 1931
98 cities.....	4	7	23	7	6	13	24	16	45	16
New England.....	14	0	12	0	26	0	2	0	48	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	4	2	7	5	1	15	1	10	3	21
West North Central.....	10	43	4	46	6	63	17	98	13	77
South Atlantic.....	0	0	0	0	0	2	0	0	0	4
East South Central.....	0	0	0	0	23	6	12	18	23	29
West South Central.....	7	17	0	17	26	37	16	27	0	34
Mountain.....	0	35	9	9	9	9	9	74	70	9
Pacific.....	8	20	26	10	19	18	8	20	27	20

## TYPHOID FEVER CASE RATES

	6	7	25	5	4	4	35	5	47	56
98 cities.....										
New England.....	2	2	12	2	2	5	0	0	43	2
Middle Atlantic.....	4	3	3	4	5	2	4	2	4	3
East North Central.....	2	12	4	4	2	2	2	2	3	3
West North Central.....	4	6	2	2	2	0	2	4	4	10
South Atlantic.....	14	16	6	4	8	10	18	10	29	14
East South Central.....	12	18	35	48	0	12	29	53	12	12
West South Central.....	44	0	3	3	13	20	10	14	23	27
Mountain.....	0	9	0	18	9	17	9	9	70	17
Pacific.....	4	6	28	6	4	2	0	2	11	6

## INFLUENZA DEATH RATES

	9	11	13	16	18	24	34	36	42	52
91 cities.....										
New England.....	7	2	2	7	10	5	19	10	48	12
Middle Atlantic.....	7	10	5	17	12	29	12	59	8	91
East North Central.....	5	7	10	7	14	12	15	9	10	18
West North Central.....	3	9	9	3	9	21	3	18	6	29
South Atlantic.....	12	24	18	10	35	28	12	42	24	38
East South Central.....	32	19	25	26	31	45	44	64	44	64
West South Central.....	24	32	46	93	30	76	30	79	13	83
Mountain.....	70	0	131	18	103	44	103	35	727	44
Pacific.....	7	17	14	10	23	22	26	10	14	22

## PNEUMONIA DEATH RATES

	101	126	121	164	144	187	226	219	220	229
91 cities.....										
New England.....	94	119	91	160	165	113	103	159	109	178
Middle Atlantic.....	101	126	126	184	148	233	133	311	126	332
East North Central.....	77	94	84	103	104	110	82	124	79	126
West North Central.....	118	117	108	180	181	200	119	212	164	171
South Atlantic.....	132	174	174	230	196	267	208	237	186	281
East South Central.....	113	149	140	207	169	267	132	229	107	299
West South Central.....	131	189	152	199	128	238	148	228	165	245
Mountain.....	226	194	165	264	293	244	181	270	152	157
Pacific.....	89	135	175	135	167	134	158	118	123	108

<sup>1</sup> Spokane, Wash., not included.

<sup>2</sup> Fort Wayne, Ind., not included.

<sup>3</sup> Hartford, Conn., and Boise, Idaho, not included.

<sup>4</sup> Columbia, S. C., not included.

<sup>5</sup> Hartford, Conn., not included.

<sup>6</sup> Boise, Idaho, not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Weeks ended January 9 and 16, 1932.*—The Bureau of Pensions and National Health of Canada reports cases of certain communicable diseases for the weeks ended January 9 and 16, 1932, as follows:

WEEK ENDED JANUARY 9, 1932

Province	Cerebro-spinal fever	Dysentery	Influenza	Lethargic encephalitis	Pollomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----
Nova Scotia.....	1	-----	7	-----	-----	-----	-----
New Brunswick.....	-----	-----	-----	-----	-----	-----	1
Quebec <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----
Ontario.....	-----	-----	-----	-----	-----	2	7
Manitoba.....	-----	-----	-----	-----	-----	-----	1
Saskatchewan.....	-----	-----	-----	-----	-----	10	1
Alberta <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----
British Columbia.....	1	-----	-----	-----	-----	2	1
Total.....	2	-----	7	-----	-----	14	11

WEEK ENDED JANUARY 16, 1932

Prince Edward Island <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----
Nova Scotia.....	-----	-----	5	-----	-----	-----	1
New Brunswick.....	-----	-----	-----	-----	-----	-----	3
Quebec <sup>1</sup> .....	-----	-----	-----	-----	-----	-----	-----
Ontario.....	2	-----	1	1	1	3	3
Manitoba.....	-----	-----	-----	-----	-----	-----	5
Saskatchewan.....	-----	-----	-----	-----	-----	21	1
Alberta.....	-----	-----	-----	-----	1	-----	-----
British Columbia.....	-----	2	-----	-----	-----	1	-----
Total.....	2	2	6	1	2	25	13

<sup>1</sup> No case of any disease included in the table was reported during the week.

<sup>2</sup> No report received for the week.

*Ontario—Communicable diseases—Comparative—Four weeks ended December 26, 1931.*—Certain communicable diseases were reported in the Province of Ontario, Canada, for the four weeks ended December 26, 1931, and the corresponding period of the year 1930, as follows:

Disease	1930		1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	2	5	4	2
Chanoroid.....			8	
Chicken pox.....	1,196		898	
Diphtheria.....	355	14	274	11
Dysentery.....	1	1	2	
Erysipelas.....	1		6	
German measles.....	26		23	
Gonorrhea.....	172		288	
Influenza.....	14	4	5	2
Jaundice.....			24	
Lethargic encephalitis.....			1	1
Measles.....	83		2,428	3
Mumps.....	448		464	1
Paratyphoid fever.....			6	
Pneumonia.....		126		107
Poliomyelitis.....	9		2	
Scarlet fever.....	612	1	468	
Smallpox <sup>1</sup> .....	4		6	
Septic sore throat.....	296	5	14	1
Syphilis.....	143		193	
Trench mouth.....			2	
Tuberculosis.....	136	29	209	29
Tularaemia.....			1	
Typhoid fever.....	50	2	53	2
Undulant fever.....	2		4	
Whooping cough.....	338	4	578	1

<sup>1</sup> The following municipalities reported cases of smallpox during the period: Ottawa, 2; Ernestown, 3; and East York, 1.

*Quebec Province—Communicable diseases—Week ended January 23, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended January 23, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Poliomyelitis.....	3
Chicken pox.....	100	Puerperal septicemia.....	3
Diphtheria.....	66	Scarlet fever.....	81
Erysipelas.....	3	Smallpox.....	1
German measles.....	18	Typhoid fever.....	5
Measles.....	319	Whooping cough.....	54
Ophthalmia neonatorum.....	1		

*Quebec Province—Vital statistics—April–July, 1931.*—Births, deaths, and marriages for the months of April to July, 1931, in the Province of Quebec, Canada, with deaths from certain specified causes, are shown in the following tables:

	April	May	June	July
Estimated population.....	2,782,500	2,782,500	2,782,500	2,782,500
Births.....	6,793	7,024	6,776	6,761
Birth rate per 1,000 population.....	29.7	29.7	29.6	28.6
Deaths.....	2,863	2,721	2,459	2,531
Death rate per 1,000 population.....	12.5	11.5	10.7	10.7
Marriages.....	1,351	1,213	2,486	1,688
Deaths under 1 year.....	764	674	551	650
Deaths under 1 year per 1,000 births.....	111.0	96.0	79.1	96.1

## Deaths from certain causes in Quebec Province

Cause of death	April	May	June	July
Cancer.....	193	160	197	171
Cerebrospinal meningitis.....	2			
Diabetes.....	36	22	31	28
Diarrhea.....	137	124	119	266
Diphtheria.....	26	11	19	19
Heart disease.....	305	341	283	272
Influenza.....	116	84	30	11
Lethargic encephalitis.....		2		
Measles.....	9	18	8	6
Nephritis.....	186	155	149	140
Poliomyelitis.....		1	1	2
Puerperal state.....	32	35	32	24
Scarlet fever.....	12	9	13	4
Syphilis.....	11	21	11	15
Traffic.....	17	36	50	48
Tuberculosis, pulmonary.....	286	211	200	196
Tuberculosis, other forms.....	68	77	63	66
Typhoid fever.....	18	16	11	11
Violence.....	74	96	127	194
Whooping cough.....	29	32	14	15

## CHILE

*Typhus fever on vessel.*—According to a recent report, one case of typhus fever occurred in a member of the crew of the steamship *Canelos*, a small coasting vessel running from Iquique and points north to the south of Chile. The patient was removed to an isolation hospital in Antofagasta on December 28, and the disease was found to be typhus fever on December 31, 1931.

## PORTO RICO

*San Juan—Communicable diseases—Four weeks ended January 2, 1932.*—During the four weeks ended January 2, 1932, cases of certain communicable diseases were reported in San Juan, Porto Rico, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Paratyphoid fever.....	1
Diphtheria.....	6	Poliomyelitis.....	1
Malaria.....	66	Tetanus, infantile.....	1
Measles.....	97	Typhoid fever.....	3
Mumps.....	3	Whooping cough.....	20
Ophthalmia neonatorum.....	2		

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases; D, deaths; F, present]

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended														
				October, 1931			November, 1931					December, 1931					January, 1932	
				24	31	7	14	21	28	5	12	19	26	2	9	16	23	30
Ceylon: Colombo.....	C	3																
China:	D	3																
Canton.....	C		2															
Hankow.....	D			8	5	18												
Shanghai.....	D	7	125	6	1													
Swatow.....	D		9	8														
India:	C		13	4														
Bombay.....	C	36,514	39,223	26,705	4,237	4,419	3,648	3,418	3,451	3,302								
Calcutta.....	D	20,276	21,683	13,257	2,252	2,360	2,400	1,789	1,744	1,713								
Chittagong.....	D	44	42	4	4	1	1	1	3									
Karikal.....	D	25	17	3														
Madras.....	D	110	46	51	14	13	19	26	22	19	11	22	11	10	18	25		
Negapatam.....	D	30	15	23	9	4	10	14	10	11	6	15	6	8	5	6	13	
Rangoon.....	D			1														
India (French):	C	1	2	1														
Chandernagor.....	C	1	5															
Pondicherry.....	D		1	1	1													
India (Portuguese).....	D	7	2	1	1	1												
	D	3	4	1														
	D	2	2	1														
	D	2	2	2														
	D	2	2	2														
	D	2	18	75	18	20	9	1	2	1								
	D	2	13	26	3	6	1	1	2	1								

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

### CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

[illegible]





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## PLAGUE

[C indicates cases; D, deaths; P, present]

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended—														
				October, 1931					November, 1931					December, 1931				
				24	31	7	14	21	28	5	12	19	26	2	9	16	23	30
Algeria:																		
Algiers.....	C	2																
Philippeville.....	D	1																
Argentina: Cordoba Province. <sup>1</sup>																		
Azores:																		
San Miguel Island.....	C							2		3								
Tercera Island.....	D							9		1								
Tercera Island.....	D							4		2								
Belgian Congo.....	C																	
British East Africa (see also table below):																		
Tanganyika.....	C	8	4	13														
Uganda.....	D	2	4	5														
Uganda.....	C	285	289	276	71	87	60	41	38	31								
Canary Islands: Palma Island—Los Llanos.....	D	261	207	270	69	84	58	39	35	30								
Ceylon: Colombo.....	D																	
Ceylon: Colombo.....	D	6	3	4						1								
Ceylon: Colombo.....	D	6	3	3						1								
Piague-infected rats.....	D	8																
Chile:																		
Santiago.....	C			1														
Santiago.....	D			1														
Piague-infected rats.....	C																	
Valparaiso.....	C		1															
China:																		
Shansi Province <sup>1</sup> .....	C																	
Shensi Province.....	C																	
Dutch East Indies:																		
Batavia and West Java.....	C	88	65	113	28	34	36	39	44	39	40	75						
Batavia and West Java.....	D	58	65	113	28	34	38	39	44	39	40	75						
Batavia and West Java.....	D	205	233	325	97	133	152	150	162	171	167	212	179					
Java and Madura.....	D																	







**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	Week ended—																		
	June 28, July 25, 1931	July 26, Aug. 2, 1931	Aug. 23, Sept. 19, 1931	Sept. 20- Oct. 17, 1931	November, 1931							December, 1931				January, 1932			
					October, 1931		7	14	21	28	5	12	19	26	2	9	16	23	
Algeria:																			
Algiers.....	1									1									
Constantine.....	1		1													1			
Brazil:																			
Porto Alegre (alastrim).....	41	34	48	46	7	24	3	23	9	8	15	19							
Santos.....	1	1	4	2	3						1								
Rio de Janeiro.....																			
British East Africa. Tanganyika.....	149	19	50	1,184	18				2							1			
D	17		5	97	2														
British South Africa:																			
Northern Rhodesia.....	21	26		1															
Southern Rhodesia.....	2		3														1		
Canada:																			
Alberta.....	1	1		12	1	2	2	1		2	1		9						
British Columbia.....	2	5	2			1	1	1									2	1	4
Manitoba.....			1						1										
Winnipeg.....			1																
Nova Scotia.....																			
Ontario.....	35	5	6	17		7	3	5	3	2	5	1	10				2	2	3
Kingston.....			1																
North Bay.....																			
Ottawa.....			1	8		4	3	5										1	
Toronto.....									1										
Quebec.....	1																		
Saskatchewan.....	42	26	33	11	11	3	1	18	12	5	9	8					2	1	1
Regina.....				2													1	10	21
Chile:																			
Antofagasta.....	1																		
Santiago.....					2	1													
					1	1													
Tocopilla.....																			
China:																	2		
Amoy.....	2	1	1	2	1	1													
D	2	1	1	1	1												66	49	60
				1			1	6	2	5	11	28	60	22	20		19	18	37
							1	4		4	7	25	22	20			19	18	14
																			28



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

### SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

[illegible]



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## YELLOW FEVER

[C indicates cases; D, deaths; P, present]

[illegible]





UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORT

ISSUED WEEKLY

BY THE UNITED STATES  
PUBLIC HEALTH SERVICE

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VOLUME 47    ::    NUMBER 8

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FEBRUARY 19 - - 1932

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SPECIAL ARTICLES

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Prevalence of Communicable Diseases in the United States  
Spirocheticidal Activity of Neoarsphenamine as Measured  
by Prophylactic Power



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932

## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

FEBRUARY 19, 1932

NO. 8

## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES<sup>1</sup>

January 3-30, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the PUBLIC HEALTH REPORTS, under the section entitled "Prevalence of Disease."

*Poliomyelitis.*—The incidence of poliomyelitis continued to decline through the month of January. For the 4-week period ended January 30 the number of cases totaled 156, which represents a decrease of about 20 per cent from last year's figure, but is still more than twice the number reported for the same period in 1930 and 1929—more nearly normal years. While the number of cases reported was not large in either group of States, the New England and Middle Atlantic group reported 45 cases for the current period and the South Central States reported 23 cases, which was in both instances the highest number reported for the same period in four years. Decreases from last year in other areas ranged from 11 per cent in the South Atlantic States to 62 per cent in the West North Central States.

*Measles.*—There were 27,336 cases of measles reported for the current 4-week period, an increase of approximately 13,000 over the preceding 4-week period. All regions contributed to this increase. In the country as a whole the incidence during the current period was 8 per cent below the incidence during the corresponding period of last year, but was almost 20 per cent above that of 1930. An increase of 60 per cent over last year's figure in the number of cases was reported from the New England and Middle Atlantic States, but all other areas either approximated the incidence last year or showed considerable decreases.

*Influenza.*—The number of cases of influenza reported for the four weeks ended January 30 was 6,909, as compared with 24,685 cases for the same period in 1931 and 10,225 cases in 1930. Each geo-

<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The number of States included for the various diseases are as follows: Typhoid fever, 27; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

graphic area reported some increase over the preceding 4-week period of the current year, but the only area showing an increase over the corresponding period of last year was the Mountain and Pacific, 1,710 cases being reported for the current period as against 720 for the same period last year. Only two groups, the Mountain and Pacific and the New England and Middle Atlantic, reported more cases for the current period than were reported for the corresponding period in 1930. In general, influenza has maintained a very satisfactory level throughout the fall and winter months.

*Diphtheria*.—For the country as a whole, the diphtheria incidence for the period under report (6,730 cases), although showing the usual seasonal decline, was still about 25 per cent in excess of the incidence for the same period last year, but was approximately the same as in the corresponding period of 1930. A comparison of geographic areas shows that the disease was more prevalent in all areas except the New England and Middle Atlantic than at the same time last year. In that group a decrease of about 7 per cent in the number of cases was reported for the current 4-week period. The disease was considerably more prevalent this year in the South Central States than during the same period of 1930, but in the New England and Middle Atlantic States the number of cases reported for the current period was less than two-thirds of the number reported for the same period in 1930.

*Meningococcus meningitis*.—Although the number of reported cases of meningococcus meningitis increased slightly during the current 4-week period, as is usual at this season, the disease was still considerably less prevalent than during the corresponding period of any of the last four years. For the current period the cases numbered 314, as compared with 595, 942, and 820 for the corresponding periods of 1931, 1930, and 1929, respectively. Practically all sections of the country shared in this favorable situation.

*Smallpox*.—With the exception of the South Central States, all geographic areas reported only the normal seasonal prevalence of smallpox. The number of cases reported from the South Central groups totaled 723 for the current 4-week period, as compared with 178 for the preceding 4-week period. Each State in the group reported an increase in the number of cases, but the largest numbers were reported from Alabama, Mississippi, Oklahoma, and Texas.

Compared with previous years the total number of cases (2,084) reported for the current period was less than one-half of the number reported for the corresponding period in 1931 and less than one-third of the number for the same period in 1930. The lowered incidence was very general; only one geographic area, the New England and Middle Atlantic, reported more cases for the current period than were reported for the same period in any of the last four years. In the New Eng-

land and Middle Atlantic group, Massachusetts reported 40 cases for the current period, which is the first time any cases have been reported from that State since 1929. The disease still remained unusually prevalent in Vermont (47 cases) and Connecticut (33 cases).

*Typhoid fever.*—The number of cases of typhoid fever reported for the 4-week period ended January 30 was approximately 50 per cent in excess of the number reported in the corresponding period in each of the two preceding years. In fact, the number of cases (923) was the highest reported for the same period in four years, and was almost twice the number reported for this period in 1929. The increase extended to all regions except the West North Central and Mountain and Pacific, in each of which a decrease from last year's figure of approximately 20 per cent was reported.

*Scarlet fever.*—The scarlet fever incidence was slightly lower for the current period than for the same period last year, but was considerably above the average for recent years. For the combined reporting areas the number of cases totaled 20,384, as compared with 21,452 and 19,030 for the corresponding periods of 1931 and 1930, respectively. The incidence in relation to that for the same period of last year was slightly higher in the New England and Middle Atlantic and South Central groups of States, 30 per cent lower in the North Central groups, 18 per cent lower in the South Atlantic States, and in the Mountain and Pacific States was approximately the same as it was last year.

*Mortality, all causes.*—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, was 12.3 per thousand population (annual basis), as compared with 14.5 for the same period last year and 13.0 in 1930. The current mortality is low in relation to recent years, the rate being the lowest for this period in seven years.

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## THE RELATION BETWEEN TRYPANOCIDAL AND SPIROCHETICIDAL ACTIVITIES OF NEOARSPHENAMINE

### II. THE SPIROCHETICIDAL ACTIVITY AS MEASURED BY THE PROPHYLACTIC POWER OF NEOARSPHENAMINE

By T. F. PROBEY, *Assistant Pharmacologist, United States Public Health Service*

The spirocheticidal test in experimental syphilis in rabbits has several methods of application with the object of studying the anti-syphilitic activity of drugs. In a previous report, *The Relation Between the Trypanocidal and Spirocheticidal Activities of Neoarsphenamines* (1), the therapeutic dose—minimal dose which caused rapid disappearance of the spirochetes from the primary lesion and healing of the lesion without relapse—was the basis of evaluation of the comparative spirocheticidal activity of these drugs.

The determination of the prophylactic power of the antisyphilitic drugs as a means of ascertaining their spirocheticidal activity has been suggested by Wakerlin and Loevenhart (2). These authors reported that a parallelism existed between the prophylactic and sterilizing powers of a compound and concluded that the determination of the prophylactic activity should become a part of the accepted technique in the evaluation of the therapeutic efficacy of a drug in the treatment of experimental syphilis in rabbits.

It was, therefore, decided to continue the study of the comparative spirocheticidal activity of neoarsphenamines of different trypanocidal activity, using the prophylactic dose as the means of estimating their therapeutic efficiency in experimental syphilis in rabbits.

The reported results of the successful treatment with one prophylactic dose of neoarsphenamine in experimental syphilis in rabbits vary from 10 mg. per kilo to 45 mg. per kilo. In the first report Vecchia, quoted by Mibelli (3), gave the protective dose of neoarsphenamine in experimental syphilis in rabbits as 10 mg. per kilo administered as late as the fourth day, but ineffective if delayed to the fifth day, after inoculation. Greenbaum and Harkins (4) (1924), and Wakerlin and Loevenhart (2) (1928), however, reported prevention of the development of the disease in rabbits when treated within 24 hours after inoculation with doses of 45 mg. and 40 mg. per kilo, respectively. The final criterion of the prevention of the infection in the Greenbaum and Harkins series was by the reinoculation test, while in the Wakerlin and Loevenhart group the negative rabbits were killed, microscopic examinations made of the testes, and lymph node transfers made from several of the animals in which the disease failed to develop.

The trypanocidal and the spirocheticidal activities of the neoarsphenamines used in this investigation have been reported (1) under designation of neoarsphenamine lot E 7 and F 6.

Neoarsphenamine brand E represented the most effective in trypanocidal activity among several tested, while brand F proved to be the least effective. These products were found to have no noteworthy difference in their spirocheticidal activity as indicated by approximately the same ability to cause the rapid disappearance of the spirochetes from the chancre, to cause the rapid healing of the lesion with freedom from clinical relapse, and in their influence on the Kahn reaction in experimental syphilis in rabbits.

#### EXPERIMENTAL

The rabbits were inoculated in the left side of the scrotum with approximately 0.3 c. c. of testicular emulsion of Nichols' strain of *Treponema pallidum*. The suspension was made from a testicle with an active, dark-field positive lesion. Treatment consisted of one

intravenous injection of neoarsphenamine two days after inoculation, dose and product as shown in the protocols. The control group received no treatment. The animals were observed for evidence of infection as indicated by presence of a lesion, by dark-field examination, and by quantitative Kahn test.

The evaluation of the therapeutic efficiency of the preparations was based upon the minimal dose which protects the rabbits from manifestations of the disease.

It was deemed advisable to eliminate the probability of asymptomatic infection. Lymph gland and testicular emulsion transfers were made from animals which had been given the important doses only, and which had failed to develop evidence of the disease and had survived the period of observation. The procedure as outlined by Voegtlin and Dyer (5) for the tissue-transfer method was followed, except that the transfer animals which remained negative were not inoculated with a suspension of spirochetes—reinoculation test method.

The prophylactic power of neoarsphenamine E 7 and F 6 at 20, 30, and 40 mg. per kilo on experimental syphilis in rabbits is reported in Table 1. The animals were inoculated October 28, 1929, and given one treatment two days later. Observations extended over a period of 150 days, after which tissue transfer tests were made on representative rabbits from each dose group and from untreated controls for final appraisal of the treatment.

In Table 2 is reported the effect of one prophylactic dose of the same two neoarsphenamines at doses of 5, 10, 15, and 20 mg. per kilo. The rabbits were inoculated November 1, 1930, treated two days later, and observed for 148 days, after which tissue transfer tests were made from the surviving negative animals and from two positives as control, as indicated in the protocol.

Evaluation of the efficiency of a drug to protect animals from the development of infection is dependent upon the definition of protection, either absolute or arbitrary. If absolute protection of all animals is accepted as the definition of the prophylactic power, then F 6 was more effective than E 7, as the former protected all animals at 30 mg. per kilo, whereas the latter required 40 mg. for protection of all. However, consideration of the entire series of animals would indicate that the protective dose of both products might be placed at 20 mg. per kilo. With treatment at this dose, 13 of 14 animals (92.8 per cent) were protected by F 6 and 12 of the 13 rabbits (92.3 per cent) by E 7. If, therefore, the prophylactic dose of neoarsphenamine is defined as the minimal dose of a drug which will protect 90 per cent of the animals from developing clinical manifestations of experimental syphilis, and the probability of asymptomatic infection is eliminated, then, in this series, the protecting dose of neoarsphenamine is 20 mg. per kilo for both products.

TABLE 1.—*Prophylactic activity of nearsphenamine, lots F 6 and E 7. Rabbits inoculated October 28, 1929; treated October 30, 1929*

## PERIOD OF OBSERVATION, 150 DAYS

Product	20 mg. per kg.						30 mg. per kg.						40 mg. per kg.						Untreated controls						
	Rabbit No.	Le- sion	Dark field	Kahn (days)			Rabbit No.	Le- sion	Dark field	Kahn (days)	Rabbit No.	Le- sion	Dark field	Kahn (days)			Rabbit No.	Le- sion	Dark field	Kahn (days)					
				25	50	83								25	50	83				25	50	83			
F 6.	1191	—	—	4	4	4	194	—	—	4	4	4	199	—	—	4	4	4	190	+	+	4	4	40	80
	1193	—	—	0	0	0	196	—	—	0	4	4	202	—	—	4	0	0	206	+	+	4	4	20	80
	1195	—	—	4	4	4	197	—	—	4	4	4	215	—	—	0	0	0	223	+	+	0	0	40	80
	207	—	—	0	0	0	210	—	—	0	0	0	216	—	—	0	0	0	224	+	+	0	0	40	80
	209	—	—	0	0	0	219	—	—	0	0	0	225	—	—	0	0	0	227	+	+	0	0	4	80
	213	—	—	0	0	0	237	—	—	0	0	0	223	—	—	0	0	0	228	+	+	0	0	4	4
	217	—	—	0	0	0	250	—	—	4	4	4	234	—	—	4	4	4	233	+	+	4	4	40	160
	1231	—	—	0	0	4	254	—	—	4	4	4	235	—	—	4	4	4	236	+	+	4	4	40	80
	255	—	—	4	4	4	204	—	—	4	20	20	238	—	—	0	4	4	239	+	+	0	4	4	4
	1198	—	—	0	0	0	211	+	+	0	4	80	230	—	—	4	4	4	240	+	+	4	4	40	80
	203	—	—	4	4	4	218	—	—	0	4	4	221	—	—	0	0	0	241	+	+	0	4	40	80
	208	—	—	0	0	0	220	—	—	0	0	0	222	—	—	0	0	0	242	+	+	0	4	40	80
212	+	+	4	4	40	229	—	—	4	4	4	243	—	—	0	0	0	244	+	+	4	4	40	80	
E 7.	230	—	—	0	0	0	239	—	—	0	0	0	242	—	—	0	0	0	245	+	+	4	4	40	80
	232	—	—	4	4	4	243	—	—	0	0	0	244	—	—	4	4	4	246	+	+	4	4	40	80
	240	—	—	0	0	4	247	—	—	0	0	0	248	—	—	4	4	4	249	+	+	4	4	40	80
	241	—	—	0	0	0	251	—	—	0	4	0	252	—	—	0	0	0	253	+	+	4	4	40	80
	241	—	—	0	0	0	253	—	—	0	4	0	254	—	—	0	0	0	255	+	+	4	4	40	80

1 Result of transfers given in this table.





TABLE 2.—*Prophylactic activity of nearsphenamine. Rabbits inoculated November 1, 1930; treated November 3, 1930*

PERIOD OF OBSERVATION, 148 DAYS

Product	5 mg. per kg.						10 mg. per kg.						15 mg. per kg.						20 mg. per kg.						Untreated controls							
	Rab- bit No.	Le- sion field	Kahn (days)			Rab- bit No.	Le- sion field	Kahn (days)			Rab- bit No.	Le- sion field	Kahn (days)			Rab- bit No.	Le- sion field	Kahn (days)			Rab- bit No.	Le- sion field	Kahn (days)			Rab- bit No.	Le- sion field	Kahn (days)				
			8	72	104			8	72	104			8	72	104			8	72	104			8	72	104			8	72	104		
F 6	306	+	+	+	303	+	+	+	321	+	+	+	322	+	+	+	329	+	+	+	305	+	+	+	320	+	+	+	308	+	+	+
	307	+	+	+	314	+	+	+	322	+	+	+	322	+	+	+	331	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
	308	+	+	+	315	+	+	+	324	+	+	+	325	+	+	+	331	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
	309	+	+	+	316	+	+	+	325	+	+	+	325	+	+	+	332	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
	310	+	+	+	317	+	+	+	326	+	+	+	326	+	+	+	333	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
	311	+	+	+	318	+	+	+	327	+	+	+	327	+	+	+	335	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
	312	+	+	+	319	+	+	+	327	+	+	+	327	+	+	+	335	+	+	+	351	+	+	+	351	+	+	+	351	+	+	40
E 7	300	+	+	+	352	+	+	+	345	+	+	+	345	+	+	+	337	+	+	+	305	+	+	+	320	+	+	+	308	+	+	80
	361	+	+	+	353	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80
	362	+	+	+	354	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80
	363	+	+	+	355	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80
	364	+	+	+	356	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80
	365	+	+	+	357	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80
	366	+	+	+	358	+	+	+	346	+	+	+	346	+	+	+	337	+	+	+	351	+	+	+	351	+	+	+	351	+	+	80

+ Result of transfers given in this table.



Positive evidence of asymptomatic infection was found in one rabbit, No. 349, in a total of 25 transfers from 25 apparently negative rabbits. This animal had been treated with 15 mg. per kilo of lot E 7.

It is indicated that the Kahn test is of little value in the appraisal of the prophylactic treatment in experimental syphilis, other than as a confirmatory test. This is to be expected, since the serology in experimental rabbit syphilis parallels the evolution of the primary syphilitic lesion (1) (6).

The material presented in Table 3 contains the report of the trypanocidal and spirocheticidal (therapeutic dose) activities of neoarsphenamines E 7 and F 6, represented by Table 6 in the previous report (1), to which is added the spirocheticidal activity as measured by the prophylactic power of the same products. It will be noted that it requires a larger dose of neoarsphenamine to protect rabbits against the development of the disease when treated two days after inoculation than that necessary to effect complete reduction of the active primary lesions. Greenbaum and Harkins (4) and Kolmer (7) reported similar observations on the relation between the prophylactic and the curative doses.

TABLE 3.—*The trypanocidal and spirocheticidal properties of neoarsphenamine, per cent of efficiency*

Product	Trypanocidal test (in rats)			Spirocheticidal test (in rabbits)												
	Dose (mg. per kg )			M. E. D. (mg. per kg.)	Therapeutic dose					Prophylactic dose						
					Dose (mg. per kg )				Effective dose	Dose (mg. per kg.)						Effective dose (mg. per kg.)
	35	25	15		15	12.5	10	5		40	30	20	15	10	5	
F 5-----	100	100	40	25	80	-----	66	17	15	-----	-----	-----	-----	-----	-----	-----
F 6-----	100	100	000	25	100	100	-----	-----	>12.5	100	100	93	66	50	14	20
	Doses (mg. per kg )															
	15	10	7													
E 1-----	100	0	25	15	100	-----	50	17	15	-----	-----	-----	-----	-----	-----	-----
E 7-----	100	60	0	15	100	100	-----	-----	>12.5	100	90	92	20	50	20	20

The results obtained in this series parallel the reported findings of Voegtlin and Dyer (5) in their report on the sterilizing effect of one treatment of the arsenicals, i. e., that an essential relation of the size of dose to sterilizing effect is apparent in experimental rabbit syphilis, as indicated by the definite minimum concentration of the arsenical needed to kill every one of the parasites in the infected host. This is clearly indicated in the progressive percentage protection which follows the increase in the dose given.

## CONCLUSION

From the data presented, two brands of neoarsphenamine previously reported, varying markedly in their trypanocidal activity, having approximately the same spirocheticidal activity in reducing primary lesions, are here reported to be remarkably uniform in protecting rabbits against the development of experimental syphilis when treated with one prophylactic dose two days after inoculation.

## REFERENCES

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- (5) Voegtlin and Dyer: Pub. Health Rep., vol. 52 (1927), p. 176.
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- (7) Kolmer: Chemotherapy (1926), p. 941.

## DEATH RATES IN A GROUP OF INSURED PERSONS

**Rates for Principal Causes of Death for 1931 as compared with 1911 and 1921-1930, and for the month of December, 1931.**

The accompanying tables are taken from the Statistical Bulletin of January, 1932, issued by the Metropolitan Life Insurance Co. They present the mortality experience of the industrial insurance department of the company, by principal cause of death, for 1931 as compared with 1911 and 1921-1930, inclusive, and for December, 1931. The rates for recent years are based on a strength varying between 17,000,000 and 19,000,000 insured persons in the United States and Canada, comprising about one-seventh of the total and about one-third of the urban population of the two countries. While this is a more or less selected group of persons and is largely urban, the death rate serves as an early index of conditions in the general population. In recent years the general death rates in this group have been averaging about 72 per cent of the death rate for the registration area of the United States.

## 1931 AND COMPARISON WITH 1911 AND YEARS 1921-1930

Although 1931 started badly, from a health standpoint, with an incipient influenza epidemic and unfavorable economic conditions, the health record for this group was remarkably good, as reflected by the death rate, which was only 1 per cent higher than the previous low rate established only the year before. On the basis of this record

the Bulletin states that "as yet there has not been any appreciable injury to the public health from the economic conditions that have prevailed."

It is stated that six diseases—tuberculosis, diphtheria, whooping cough, pneumonia, diarrheal complaints, and puerperal conditions—recorded lower mortality rates in 1931 than ever before, while the rate for typhoid fever was the same as the minimal figure previously established.

*Tuberculosis.*—In spite of the prevailing economic condition, the mortality rate for tuberculosis dropped 5.7 per cent—a larger decrease than the average year-to-year decline during the latest decade. The rate, 76.7 per 100,000, is 65.9 per cent lower than that for 1911 and 44.4 per cent below the rate for 1920.

*Diphtheria.*—The death rates for all four of the principal communicable diseases of childhood were low in 1931, while those for diphtheria and whooping cough reached new minimal figures. Diphtheria shows a drop of 24.6 per cent in one year and of 50 per cent in two years. As compared with the rate for 1911, the decline is more than 84 per cent.

*Pneumonia.*—It is somewhat surprising that the reduction of the pneumonia death rate to a new minimum came in a year when there was an epidemic of influenza. It is stated that even during the epidemic, the mortality from pneumonia did not rise as sharply as in former influenza outbreaks, and that after the epidemic had run its course, every succeeding month of 1931 registered a very low pneumonia death rate.

*Diarrheal diseases.*—As diarrheal diseases are considered an excellent index of community sanitation, the lowered death rate for these conditions points to successful efforts in the protection of food and milk supplies, as well as in other preventive measures.

*Puerperal conditions.*—The death rate for diseases of pregnancy and childbirth in this group for 1931 shows a reduction of 3.3 per cent from the previous minimum rate recorded in 1930. While part of the decline that has taken place during the last decade is due to the falling birth rate, some of the reduction is real, as shown by computing the rate on the basis of live births.

*Other death rates lower than in 1930.*—New minimal death rates were recorded for accidental burns and for injuries in railroad accidents, and lower rates than in 1930 were shown for alcoholism and chronic nephritis.

*Higher rates than in 1930.*—A noteworthy increase of 7.4 per cent is shown in the death rate for cancer in 1931, and the rate was nearly 26 per cent higher than in 1911. The death rate for diseases of the heart was 2 per cent higher than it was 20 years ago. An encouraging feature is the fact that the death rate from this cause is increasing at

the older ages only, and that there is a tendency to decline among children and young adults, indicating the favorable effect of public health measures in reducing the incidence of infections which lead to heart impairments.

Diabetes also recorded a new high death rate in this group of persons. The rate was 14.4 per cent higher than in 1930 and 61 per cent higher than it was 20 years ago. It is stated that while the death rate for diabetes has declined in recent years at all ages under 45, the increase in later life, particularly among women, has been so pronounced as to outweigh the improvement at the younger ages.

The mortality from automobile accidents increased more than 5 per cent over the rate for 1930. There has been a rise of almost 900 per cent in 20 years. It is estimated that not less than 34,000 people lost their lives in automobile accidents in the United States in 1931.

*Death rates per 100,000 for principal causes, 1921 to 1931, inclusive, and comparison with 1911*

[Industrial insurance department, Metropolitan Life Insurance Co]

Cause of death	1931 <sup>1</sup>	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1911
All causes of death	846.2	837.1	891.9	869.3	842.2	885.7	846.3	848.0	897.1	882.9	870.6	1,253.0
Typhoid fever	2.4	2.4	2.4	2.7	4.7	4.2	4.6	4.4	5.2	5.7	6.7	22.8
Communicable diseases of childhood	11.8	12.4	16.7	19.0	19.7	25.9	19.7	26.2	33.1	29.8	37.9	58.9
Measles	2.6	2.3	2.4	4.2	3.4	8.0	2.5	5.7	8.4	4.3	3.2	11.4
Scarlet fever	3.2	2.5	2.7	2.6	3.0	3.4	3.4	4.3	4.4	4.9	7.0	18.1
Whooping cough	1.7	1.9	3.0	2.7	3.1	5.0	3.6	3.5	4.8	2.6	3.9	7.1
Diphtheria	4.3	5.7	8.6	9.5	10.2	9.5	10.2	12.7	15.5	18.0	23.8	27.8
Influenza and pneumonia	81.4	75.9	111.7	94.8	78.7	105.6	88.3	84.4	107.7	95.3	76.5	181.2
Influenza	19.3	13.2	37.7	22.0	15.7	27.4	19.4	14.2	30.1	21.7	8.7	18.9
Pneumonia	62.1	62.7	74.0	72.8	63.0	78.2	68.9	70.2	77.6	73.7	67.8	115.3
Poliomyelitis	2.6	1.1	.6	1.2	2.0	.7	1.4	1.0	.7	.9	1.7	1.6
Tuberculosis—all forms	76.7	81.3	87.3	90.6	93.8	99.5	98.2	104.4	110.5	114.2	117.4	224.6
Tuberculosis of respiratory system	68.1	71.3	77.7	80.0	83.0	87.9	87.0	93.4	100.6	103.6	105.6	208.0
Cancer—all forms	85.4	79.5	78.8	77.0	75.6	75.1	71.8	71.5	72.7	72.0	71.7	68.0
Diabetes mellitus	21.4	18.7	18.6	17.9	17.1	17.0	15.5	15.1	16.2	17.2	15.5	18.3
Alcoholism	2.9	3.2	3.5	3.3	3.5	3.7	3.0	2.9	3.0	2.1	.9	4.0
Cerebral hemorrhage, apoplexy	261.3	261.3	58.9	57.6	56.0	56.5	54.4	61.1	61.9	62.9	62.1	64.2
Diseases of heart <sup>2</sup>	150.2	147.1	149.0	144.4	134.7	136.4	128.7	125.2	128.7	126.7	117.4	141.8
Diarrhea and enteritis	5.9	8.0	7.9	8.7	9.1	10.5	12.3	11.3	11.1	10.8	14.2	28.0
Chronic nephritis (Bright's disease)	68.1	69.2	70.6	71.8	70.8	74.9	71.2	66.5	69.6	70.3	68.0	95.0
Puerperal state—total	11.9	12.3	13.8	14.2	15.7	15.6	16.9	17.2	17.9	19.0	19.8	19.8
Total external causes	78.1	79.4	80.6	77.8	79.8	77.2	78.3	70.9	77.8	71.8	72.0	97.9
Suicides	10.2	10.0	8.7	8.5	8.4	7.8	7.0	7.3	7.4	7.5	7.6	13.8
Homicides	7.1	6.8	6.7	6.8	7.4	7.2	7.4	7.2	7.3	6.3	6.7	7.2
Accidents—total	60.8	62.5	65.2	62.5	63.9	62.3	63.9	62.4	63.0	58.1	57.6	77.4
Accidental burns	3.8	4.5	4.9	5.3	5.3	6.1	6.1	6.4	6.3	6.1	6.6	8.8
Accidental drowning	6.5	6.3	6.5	7.1	6.8	6.3	6.5	7.3	6.7	7.3	8.2	10.2
Accidental traumatism by fall	10.1	9.7	9.1	8.0	8.5	7.9	8.1	7.7	8.4	7.3	7.1	13.2
Accidental traumatism by machines	1.0	1.3	1.6	1.2	1.4	1.4	1.3	1.3	1.7	1.6	1.0	1.6
Railroad accidents	2.8	3.0	3.9	3.9	4.1	4.2	4.0	4.0	4.9	4.1	3.9	9.5
Automobile accidents	22.3	21.2	21.3	18.7	18.7	17.0	16.8	15.9	15.4	13.6	12.2	2.3
All other accidents	14.3	16.6	17.8	18.3	19.1	19.4	21.2	19.7	19.5	18.1	18.6	81.6
Other diseases and conditions	186.1	185.3	191.5	188.3	181.0	183.6	183.4	180.9	181.7	185.1	190.5	263.5

<sup>1</sup> All 1931 death rates subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

<sup>2</sup> Rates for 1930 and 1931 not comparable with those for other years, due to changes in classification procedure.

<sup>3</sup> Excluding pericarditis, acute endocarditis, acute myocarditis and angina pectoris.

## DECEMBER, 1931

With regard to the mortality record for December, 1931, the Bulletin states:

Health conditions in December, 1931, were better than have ever been observed during the final month of any previous year. This is indicated by a mortality rate of 8.2 per 1,000, as compared with the previous December minimum of 8.6, recorded in 1930. The usual seasonal rise over the death rate in November was experienced.

*Death rates (annual basis) per 100,000 for principal causes of death, December, 1931*

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	Decem- ber, 1931	Novem- ber, 1931	Decem- ber, 1930	Year	
				1931	1930
Total, all causes.....	821.8	771.6	855.5	876.4	873.6
Typhoid fever.....	3.0	2.2	2.9	2.4	2.4
Measles.....	1.5	.6	1.1	3.2	2.9
Scarlet fever.....	3.9	2.0	1.9	3.2	2.6
Whooping cough.....	2.3	2.9	2.9	3.6	4.3
Diphtheria.....	6.4	7.6	6.8	4.5	5.9
Influenza.....	11.0	8.1	13.3	21.1	14.8
Tuberculosis (all forms).....	64.9	66.9	70.4	76.2	80.9
Tuberculosis of respiratory system.....	58.7	59.3	62.5	67.2	70.4
Cancer.....	85.4	83.6	80.1	84.0	78.2
Diabetes mellitus.....	21.8	20.5	18.1	21.1	18.4
Cerebral hemorrhage.....	58.7	54.6	64.8	60.4	60.4
Organic diseases of heart.....	144.2	131.0	148.8	147.9	144.9
Pneumonia (all forms).....	68.4	56.3	76.8	73.7	75.7
Other respiratory diseases.....	9.1	8.3	11.8	9.8	10.9
Diarrhea and enteritis.....	9.4	12.2	10.7	15.7	20.4
Bright's disease (chronic nephritis).....	66.9	65.2	69.2	67.0	68.1
Puerperal state.....	11.5	8.8	9.9	11.7	12.1
Suicides.....	11.0	8.0	9.6	10.0	9.8
Homicides.....	6.8	5.6	7.2	7.0	6.7
Other external causes (excluding suicides and homi- cides).....	53.9	56.1	60.3	60.7	62.5
Traumatism by automobiles.....	22.4	23.0	21.7	22.0	20.9
All other causes.....	181.4	171.0	189.1	183.2	191.7

<sup>1</sup> All figures in this table include insured infants under 1 year of age. The rates for 1931 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Compensation granted under workmen's compensation act for death from tularaemia.*—(Georgia Court of Appeals, Division No. 1; Metropolitan Casualty Ins. Co. et al. v. Crenshaw, 161 S. E. 649; decided Dec. 15, 1931.) A claim under the workmen's compensation act was made by a widow for compensation for the death of her husband. The court of appeals in a syllabus opinion stated that the evidence "authorized the following findings of fact: (1) That the death of the deceased was due to a disease called 'tularaemia' which he contracted by handling and dressing dead rabbits in the course of his employment while he had abrasions on his hands, the germs of the disease entering his blood stream through the abrasions; (2) that the abrasions on his hands were caused by handling heavy boxes or barrels in the

course of his employment and that the receiving of such abrasions was an accident arising out of and in the course of his employment; (3) that the disease (tularaemia) resulted naturally and unavoidably from the above-stated accident." An award which had been granted to the claimant by the industrial commission was affirmed.

## DEATHS DURING WEEK ENDED JANUARY 30, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended January 30, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Jan 30, 1932	Corresponding week, 1931
Policies in force.....	74, 193, 592	75, 238, 098
Number of death claims.....	13, 841	16, 641
Death claims per 1,000 policies in force, annual rate.....	9. 8	11. 5
Death claims per 1,000 policies, first 4 weeks of year, annual rate.....	10. 0	11. 1

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 30, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Jan 30, 1932				Corresponding week, 1931		Death rates <sup>2</sup> for the first 4 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>3</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8, 027	11. 5	592	4. 49	15. 1	808	12. 0	14. 4
Akron.....	41	8. 1	5	62	7. 9	6	8. 8	8. 3
Albany.....	40	16. 0	4	82	12. 9	1	15. 6	14. 8
Atlanta.....	80	14. 8	10	97	19. 0	9	15. 6	16. 2
White.....	41	11. 4	6	88	15. 8	4	11. 8	13. 7
Colored.....	39	21. 3	4	115	25. 2	5	23. 1	21. 1
Baltimore.....	200	12. 7	14	50	22. 0	17	14. 4	17. 0
White.....	150	11. 7	7	32	18. 8	12	13. 6	15. 4
Colored.....	50	17. 4	7	113	36. 9	5	18. 2	24. 2
Birmingham.....	72	13. 6	11	115	15. 7	8	12. 5	15. 2
White.....	41	12. 5	4	66	11. 9	4	9. 6	11. 3
Colored.....	31	15. 4	7	189	21. 9	4	17. 1	21. 6
Boston.....	207	13. 7	15	45	18. 7	22	14. 9	17. 0
Bridgeport.....	20	7. 1	1	18	17. 7	0	12. 1	14. 0
Buffalo.....	152	13. 5	3	14	14. 8	12	13. 4	14. 4
Cambridge.....	28	12. 8	4	83	13. 3	4	14. 4	13. 0
Camden.....	29	12. 7	2	35	22. 3	5	14. 9	17. 0
Canton.....	18	8. 7	1	25	8. 3	2	10. 0	10. 6
Chicago.....	671	10. 0	39	38	14. 6	75	10. 5	12. 1
Cincinnati.....	145	10. 4	17	109	18. 4	9	15. 9	18. 7
Cleveland.....	167	9. 5	16	62	10. 5	12	10. 8	11. 0
Columbus.....	98	17. 1	1	10	12. 3	7	16. 1	13. 8
Dallas.....	55	10. 2	7	-----	12. 8	8	11. 1	18. 5
White.....	47	10. 5	6	-----	12. 7	7	10. 4	12. 6
Colored.....	8	8. 6	1	-----	13. 2	1	14. 5	17. 6
Dayton.....	35	7. 7	1	14	9. 7	0	10. 3	12. 2
Denver.....	87	15. 4	6	59	13. 2	7	18. 7	16. 0
Des Moines.....	41	14. 7	1	17	13. 7	5	11. 3	12. 4
Detroit.....	269	8. 2	27	49	7. 9	39	8. 4	8. 4
Duluth.....	15	7. 7	0	0	6. 7	1	9. 0	12. 8
El Paso.....	33	16. 1	1	-----	19. 4	9	16. 0	21. 8
Erie.....	17	7. 5	0	0	11. 1	4	9. 8	11. 8

See footnotes at end of table.



*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 30, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 30, 1932				Corresponding week, 1931		Death rates for the first 4 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Fall River <sup>3</sup> .....	23	10.4	2	53	14.0	0	11.9	12.9
Flint.....	30	9.2	2	29	8.6	3	7.9	8.2
Fort Worth <sup>4</sup> .....	45	13.8	8	-----	13.4	2	11.3	13.2
White.....	35	12.7	7	-----	13.4	2	10.2	12.5
Colored.....	10	19.6	1	-----	13.4	0	17.6	17.3
Grand Rapids.....	33	9.9	3	51	7.9	1	7.7	9.5
Houston <sup>5</sup> .....	47	7.6	4	-----	11.9	6	10.7	12.6
White.....	29	6.3	2	-----	10.1	4	9.7	11.6
Colored.....	18	11.0	2	-----	17.0	2	13.4	18.4
Indianapolis <sup>6</sup> .....	79	11.0	2	16	13.4	6	13.5	14.0
White.....	68	10.8	1	9	13.5	6	13.0	13.7
Colored.....	11	12.5	1	69	12.7	0	17.3	16.7
Jersey City.....	59	9.6	6	50	10.9	21	10.6	15.3
Kansas City, Kans. <sup>4</sup> .....	25	10.6	3	66	14.8	4	12.8	15.8
White.....	22	11.5	2	54	13.1	4	12.0	14.0
Colored.....	3	6.6	1	128	22.2	0	16.0	23.8
Kansas City, Mo.....	86	10.8	6	68	14.8	8	11.6	14.6
Knoxville <sup>6</sup> .....	27	12.6	2	51	15.8	4	12.1	16.1
White.....	17	9.5	0	0	15.4	3	10.8	14.5
Colored.....	10	28.6	2	539	17.6	1	19.3	24.2
Long Beach.....	38	12.3	0	0	8.6	0	11.4	10.3
Los Angeles.....	331	12.5	22	65	13.3	23	12.8	13.6
Louisville <sup>6</sup> .....	91	15.4	5	46	20.0	11	14.8	20.0
White.....	66	13.2	3	31	17.4	9	13.1	17.6
Colored.....	25	27.3	2	149	33.9	2	23.8	33.1
Lowell <sup>7</sup> .....	29	14.6	4	105	17.2	1	14.1	15.6
Lynn.....	18	9.1	4	113	19.3	2	10.7	15.0
Memphis <sup>8</sup> .....	67	13.3	3	33	17.3	10	16.8	17.8
White.....	38	12.2	1	17	15.0	7	13.0	15.5
Colored.....	29	15.1	2	60	21.1	3	22.8	21.6
Miami <sup>9</sup> .....	24	11.0	0	0	15.8	2	14.0	12.4
White.....	19	11.2	0	0	16.1	2	13.1	12.6
Colored.....	5	10.3	0	0	14.4	0	17.0	11.9
Milwaukee.....	100	8.7	8	38	10.9	16	9.4	10.4
Minneapolis.....	74	8.0	0	0	11.2	8	9.0	12.2
Nashville <sup>4</sup> .....	42	14.0	6	90	19.8	3	13.3	17.4
White.....	29	13.3	4	78	17.1	3	13.0	14.9
Colored.....	13	15.8	2	125	26.8	0	14.3	23.8
New Bedford <sup>7</sup> .....	22	10.2	4	115	11.1	1	11.6	12.7
New Haven.....	38	12.2	3	60	13.5	0	12.9	13.5
New Orleans <sup>4</sup> .....	149	16.4	10	57	21.7	11	15.8	21.3
White.....	84	13.0	4	35	20.8	6	13.3	18.5
Colored.....	65	24.7	6	98	24.0	5	22.1	28.3
New York.....	1,418	10.3	118	53	16.3	175	10.8	15.6
Bronx Borough.....	206	7.8	14	40	12.2	18	8.3	11.8
Brooklyn Borough.....	483	9.4	43	48	15.9	80	9.7	14.9
Manhattan Borough.....	525	15.5	46	66	22.6	69	16.5	23.1
Queens Borough.....	166	7.2	14	58	11.7	17	7.1	10.7
Richmond Borough.....	38	11.9	1	20	17.9	1	14.1	15.3
Newark, N. J.....	109	12.7	11	60	16.7	13	11.0	14.1
Oakland.....	68	11.9	5	63	11.4	4	11.9	13.1
Oklahoma City.....	34	8.6	4	55	10.9	3	10.5	11.7
Omaha.....	64	15.3	4	45	15.9	9	13.9	14.7
Paterson.....	23	8.6	3	54	19.9	5	13.7	15.7
Peoria.....	28	13.2	1	28	13.0	5	11.8	15.5
Philadelphia.....	462	12.2	28	43	19.3	46	12.6	17.7
Pittsburgh.....	161	12.4	16	73	17.4	26	13.3	16.9
Portland, Oreg.....	64	10.8	5	64	11.5	1	12.8	12.8
Providence.....	72	14.7	3	29	18.2	7	16.0	15.9
Richmond <sup>4</sup> .....	46	13.0	4	60	18.4	6	14.9	17.0
White.....	27	10.6	2	45	15.9	3	12.9	13.9
Colored.....	19	18.8	2	92	24.6	3	19.8	24.9
Rochester.....	71	11.1	6	57	14.4	4	12.2	13.5
St. Louis.....	240	15.1	18	64	17.6	16	15.1	16.9
St. Paul.....	50	9.3	2	21	12.1	3	9.7	11.2
Salt Lake City <sup>4</sup> .....	27	9.7	2	31	10.6	2	11.3	12.6
San Antonio.....	76	16.1	10	-----	17.4	11	14.4	16.6
San Diego.....	54	17.3	2	43	17.0	3	17.5	16.9
San Francisco.....	203	16.0	9	62	14.4	5	15.0	16.9
Schenectady.....	29	15.7	2	58	11.9	0	12.6	10.2
Seattle.....	82	11.4	6	60	12.3	6	11.7	13.2
Somerville.....	15	7.4	1	40	10.4	1	8.8	10.7

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended January 30, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Jan. 30, 1932				Corresponding week, 1931		Death rates <sup>2</sup> for the first 4 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
South Bend.....	16	7.5	2	58	6.8	3	8.5	7.4
Spokane.....	36	16.1	2	53	14.3	2	13.7	14.6
Springfield, Mass.....	35	11.9	2	34	17.4	4	12.4	13.2
Syracuse.....	53	12.8	5	64	15.2	6	13.1	13.5
Tacoma.....	24	11.6	0	0	12.1	0	11.3	13.8
Tampa <sup>6</sup> .....	24	11.6	0	0	12.4	1	11.9	16.4
White.....	20	12.3	0	0	8.8	0	11.0	14.6
Colored.....	4	9.2	0	0	25.8	1	14.9	22.9
Toledo.....	71	12.3	1	11	12.8	5	12.0	12.6
Trenton.....	37	15.6	1	20	21.0	6	15.4	18.5
Utica.....	50	25.4	2	57	14.8	2	18.2	17.3
Washington, D. C. <sup>6</sup> .....	150	15.9	12	67	19.2	7	15.7	18.8
White.....	95	13.9	6	49	16.1	3	14.0	16.3
Colored.....	55	21.0	6	107	27.4	4	20.1	25.5
Waterbury.....	19	9.8	1	33	12.9	2	9.3	10.2
Wilmington, Del. <sup>7</sup> .....	26	12.8	2	45	18.1	5	14.2	15.5
Worcester.....	43	11.3	4	56	18.5	3	12.5	16.0
Yonkers.....	22	8.1	2	52	14.3	2	7.5	11.8
Youngstown.....	20	8.6	3	49	11.2	5	10.1	11.2

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930, decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended February 6, 1932, and February 7, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 6, 1932, and February 7, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931
<b>New England States:</b>								
Maine.....	6	4	77	38	581	10	0	0
New Hampshire.....	2	2		104	13	132	0	0
Vermont.....	1	1		6	100		0	0
Massachusetts.....	44	65	9	197	345	633	1	3
Rhode Island.....	9	8		21	1,051		0	0
Connecticut.....	3	10	6	182	128	257	1	1
<b>Middle Atlantic States:</b>								
New York.....	145	106	1 102	1 226	1,363	502	12	12
New Jersey.....	48	62	14	475	113	663	5	8
Pennsylvania.....	122	120			1,441	1,544	4	7
<b>East North Central States:</b>								
Ohio.....	71	57	11	43	202	217	2	6
Indiana.....	76	59	53	149	143	459	10	5
Illinois.....	124	153	80	359	151	980	8	10
Michigan.....	54	45	6	13	313	191	3	8
Wisconsin.....	35	21	44	143	133	195	2	1
<b>West North Central States:</b>								
Minnesota.....	7	16	1	5	6	39	0	1
Iowa.....	7	8			3	11	0	6
Missouri.....	40	48	5	84	26	899	4	8
North Dakota.....	3	6			7	1	0	0
South Dakota.....	5	5	9		76	8	1	1
Nebraska.....	5	9	127		24	6	5	2
Kansas.....	25	23	21	12	85	16	0	3
<b>South Atlantic States:</b>								
Delaware.....	2			56		7	0	0
Maryland.....	34	21	28	1,625	14	322	3	0
District of Columbia.....	19	12	2	48		47	0	0
Virginia.....								1
West Virginia.....	30	10	65	111	202	33	0	0
North Carolina.....	32	36	29	462	179	183	1	5
South Carolina.....	17	25	443	3 147	36	118	1	0
Georgia.....	8	7	171	806	7	145	0	4
Florida.....	19	8	5	278	9	167	0	3
<b>East South Central States:</b>								
Kentucky.....	56		209		68	97	3	3
Tennessee.....	31	3	159	185	20	212	2	5
Alabama.....	25	31	70	233	3	519	4	4
Mississippi.....	13	17					1	1
<b>West South Central States:</b>								
Arkansas.....	20	9	33	159	2	6	1	2
Louisiana.....	21	37	23	220	97	3	0	2
Oklahoma.....	30	53	420	244	1	46	0	0
Texas.....	74	76	76	151	15	100	0	1
<b>Mountain States:</b>								
Montana.....	2		1,959		94	5	0	0
Idaho.....	1			3		1	0	9
Wyoming.....			6			2	0	1
Colorado.....	13	12			40	112	1	2
New Mexico.....	51	6	76	1	12	51	0	0
Arizona.....		8	70	12		203	0	4
Utah.....		2	125	10	1	2	3	1

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 6, 1932, and February 7, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931
<b>Pacific States:</b>								
Washington.....		12			514	67	2	1
Oregon.....	3	5	148	32	68	98	0	2
California.....	78	49	306	236	325	676	3	10
Division and State	Polymyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931	Week ended Feb. 6, 1932	Week ended Feb. 7, 1931
<b>New England States:</b>								
Maine.....	0	0	19	33	0	0	2	2
New Hampshire.....	0	0	14	1	0	0	1	0
Vermont.....	0	0	6	1	4	0	0	0
Massachusetts.....	3	1	523	357	3	0	3	4
Rhode Island.....	0	0	37	39	0	0	0	0
Connecticut.....	2	0	87	53	8	0	0	0
<b>Middle Atlantic States:</b>								
New York.....	5	0	1,071	789	5	8	15	8
New Jersey.....	4	0	204	256	0	0	4	5
Pennsylvania.....	1	1	658	567	0	1	22	13
<b>East North Central States:</b>								
Ohio.....	0	1	414	499	34	93	11	13
Indiana.....	2	1	151	345	33	105	3	0
Illinois.....	10	4	448	472	5	68	4	2
Michigan.....	0	0	366	331	2	48	4	4
Wisconsin.....	1	0	96	182	3	3	0	5
<b>West North Central States:</b>								
Minnesota.....	0	2	128	110	0	9	0	3
Iowa.....	0	1	55	147	28	64	3	0
Missouri.....	1	0	88	223	17	34	3	5
North Dakota.....	0	0	18	42	17	21	1	2
South Dakota.....	0	1	7	28	11	25	1	1
Nebraska.....	0	1	30	50	6	69	0	3
Kansas.....	0	0	52	61	2	118	2	5
<b>South Atlantic States:</b>								
Delaware.....	0	0	14	23	0	0	0	0
Maryland.....	0	0	120	105	0	0	4	6
District of Columbia.....	0	0	23	37	1	0	0	0
Virginia.....	1	1						
West Virginia.....	1	0	47	48	4	21	14	3
North Carolina.....	0	1	76	86	4	5	9	2
South Carolina.....	0	0	9	13	0	2	8	7
Georgia.....	2	0	7	55	0	0	15	6
Florida.....	0	0	2	8	0	0	7	2
<b>East South Central States:</b>								
Kentucky.....	3	0	89	97	16	8	11	2
Tennessee.....	0	0	46	48	6	3	6	5
Alabama.....	1	0	20	36	2	5	17	5
Mississippi.....	0	1	12	39	17	21	10	7
<b>West South Central States:</b>								
Arkansas.....	0	1	14	17	20	38	5	1
Louisiana.....	0	2	23	24	5	10	9	15
Oklahoma.....	0	1	31	45	27	114	9	2
Texas.....	0	0	89	92	28	290	11	23
<b>Mountain States:</b>								
Montana.....	0	0	32	54	1	7	1	1
Idaho.....	0	0	2	3	4	1	0	1
Wyoming.....	0	0	3	7	0	1	0	1
Colorado.....	0	0	58	49	3	15	1	0
New Mexico.....	0	0	16	7	0	2	11	0
Arizona.....	0	0	1	7	0	1	0	1
Utah.....	0	0	17	6	0	0	0	0
<b>Pacific States:</b>								
Washington.....	0	1	60	84	16	46	2	0
Oregon.....	0	2	20	31	5	32	2	0
California.....	3	6	143	110	7	69	3	5

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Feb. 6, 1932, 2 cases; 1 case in Alabama, and 1 case in South Carolina.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pella- gra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November, 1931</i>										
Colorado <sup>1</sup> .....	4	22	-----	-----	14	-----	1	129	13	26
<i>December, 1931</i>										
Colorado.....	3	30	24	-----	20	-----	1	149	20	5
Kansas.....	5	212	7	1	83	3	3	277	20	15
Mississippi.....	1	169	1,763	1,327	29	274	1	105	69	23
New Hampshire.....	-----	9	-----	-----	-----	-----	-----	42	-----	-----
<i>January, 1932</i>										
Connecticut.....	5	32	27	-----	496	-----	3	338	34	2
Dist. of Columbia <sup>2</sup> .....	4	79	6	-----	6	1	1	95	1	6
Georgia.....	5	77	412	97	17	27	0	109	-----	44
Michigan.....	14	164	19	2	745	-----	9	1,157	44	24
Nebraska.....	-----	58	59	-----	81	-----	3	141	32	3

<sup>1</sup> An incomplete report for Colorado for November was published in PUBLIC HEALTH REPORTS dated Feb. 5, 1932, pp. 345-346.

<sup>2</sup> Figures published in PUBLIC HEALTH REPORTS dated Jan. 20, p. 272, showing 574 and 228 cases of diphtheria and influenza, respectively, as occurring in the District of Columbia in December, 1931, are erroneous. The correct figures are: Diphtheria 65, influenza 9.

<i>November, 1931</i>		<i>September, 1931</i>	
Cases		Cases	
Colorado <sup>1</sup> .....	353	Colorado.....	2
Chicken pox.....	1	Kansas.....	4
German measles.....	82	Tetanus.....	-----
Impetigo contagiosa.....	24	Kansas.....	4
Mumps.....	1	Trachoma.....	-----
Paratyphoid fever.....	3	Mississippi.....	11
Septic sore throat.....	3	Tularæmia.....	-----
Vincent's angina.....	8	Kansas.....	11
Whooping cough.....	71	Mississippi.....	1
<i>December, 1931</i>		Undulant fever.....	-----
Chicken pox.....	-----	Kansas.....	5
Colorado.....	404	Mississippi.....	1
Kansas.....	511	Vincent's angina.....	-----
Mississippi.....	420	Kansas.....	10
Dengue.....	-----	Whooping cough.....	-----
Mississippi.....	8	Colorado.....	60
Dysentery (amebic):.....	-----	Kansas.....	190
Mississippi.....	35	Mississippi.....	333
German measles.....	-----	<i>January, 1932</i>	
Colorado.....	3	Chicken pox.....	-----
Kansas.....	8	Connecticut.....	504
Lethargic encephalitis:	-----	District of Columbia.....	60
Kansas.....	2	Georgia.....	108
Mumps.....	-----	Michigan.....	1,297
Colorado.....	57	Nebraska.....	177
Kansas.....	158	Conjunctivitis.....	-----
Mississippi.....	61	Connecticut.....	2
Ophthalmia neonatorum:	-----	Dysentery.....	-----
Kansas.....	1	Connecticut (bacillary).....	1
Mississippi.....	4	Georgia.....	7
Paratyphoid fever:	-----	German measles.....	-----
Colorado.....	1	Connecticut.....	18
Paraperal septicæmia:	-----	Lethargic encephalitis:	-----
Mississippi.....	22	Connecticut.....	3
Scabies:	-----	District of Columbia.....	1
Kansas.....	7	Michigan.....	1

<sup>1</sup> An incomplete report for Colorado for November was published in PUBLIC HEALTH REPORTS dated Feb. 5, 1932, pp. 345-346.

Mumps:	Cases	Trichinosis:	Cases
Connecticut.....	345	Connecticut.....	1
Georgia.....	54	Tularaemia:	
Michigan.....	1,163	District of Columbia.....	1
Nebraska.....	110	Georgia.....	1
Paratyphoid fever:		Michigan.....	3
Connecticut.....	3	Undulant fever:	
Rabies in animals:		Connecticut.....	2
Connecticut.....	13	Georgia.....	1
Rabies in man:		Michigan.....	1
Michigan.....	1	Typhus fever:	
Septic sore throat:		Georgia.....	5
Connecticut.....	15	Whooping cough:	
Georgia.....	21	Connecticut.....	453
Michigan.....	37	District of Columbia.....	71
Tetanus:		Georgia.....	77
Connecticut.....	1	Michigan.....	1,295
		Nebraska.....	52

**Cases of Certain Communicable Diseases Reported for the Month of December, 1931, by State Health Officers**

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Maine.....	152	62	1,467	14	144	0	63	12	90
New Hampshire.....		9			42			0	
Vermont.....	332	2	766	48	49	54	18	1	156
Massachusetts.....	913	260	1,229	745	1,495	0	376	32	728
Rhode Island.....	78	27	2,249	142	128	0	47	1	28
Connecticut.....	479	32	250	175	259	96	142	13	232
New York.....	2,199	571	1,995	575	2,133	59	1,400	105	1,652
New Jersey.....	759	153	126	166	591	0	354	14	738
Pennsylvania.....	3,527	544	2,791	1,484	1,914	1	451	92	1,084
Ohio.....	2,460	535	534	676	2,071	77	558	67	1,639
Indiana.....	568	325	121	176	406	36	220	29	208
Illinois.....	1,474	603	168	133	1,378	88	1,071	64	1,250
Michigan.....	1,149	264	294	638	1,231	46	515	39	968
Wisconsin.....	1,772	94	229	860	385	43	151	6	840
Minnesota.....	470	121	71		260	35	125	15	96
Iowa.....	359	124	10	38	186	241	21	8	118
Missouri.....	382	411	37	22	381	38	187	24	446
North Dakota.....	135	53	48	12	89	40	12	2	11
South Dakota.....	152	37	275	41	61	44	5	14	51
Nebraska.....	163	88	61	47	111	26	14	7	18
Kansas.....	511	212	83	158	277	20	46	15	193
Delaware.....	39	53	6	13	23	0	8	3	30
Maryland.....	274	288	38	186	420	0	161	44	637
District of Columbia.....	27	65	6		81	0	75	3	70
Virginia.....	508	738	185		557	8	119	98	805
West Virginia.....	255	188	1,085		179	10	25	72	111
North Carolina.....	508	360	187		394	2		26	552
South Carolina.....	107	170	89	83	46		97	38	47
Georgia.....	80	111	9	20	102		72	35	24
Florida.....	25	54	4	33	36	3	38	15	13
Kentucky <sup>1</sup> .....									
Tennessee.....	70	266	49	47	211	21	117	67	159
Alabama.....	133	263	73	28	207	2	302	72	19
Mississippi.....	420	169	29	61	105	69	78	23	330
Arkansas.....	52	132	49	27	103	40	<sup>2</sup> 13	41	22
Louisiana.....	6	155	22	1	94	6	<sup>2</sup> 118	98	21
Oklahoma <sup>1</sup> .....	63	319	13	19	181	7	<sup>2</sup> 36	47	25
Texas.....		653			303			55	
Montana.....	180	4	541	10	162	18	45	4	48
Idaho.....	130	7	5	35	63	23	8	5	
Wyoming.....	51	11	26	44	43	4	0	1	10
Colorado.....	404	30	20	57	149	20	34	6	6
New Mexico.....	221	94	23	27	60	1	67	80	6
Arizona.....	152	52	10	11	33	2	122	2	16
Utah <sup>1</sup> .....									
Nevada.....	7	1		3	8	0	<sup>2</sup> 1	0	20
Washington.....	515	31	521	60	195	91	151	12	48
Oregon.....	217	6	30	84	67	41	37	10	22
California.....	1,608	438	746	463	687	39	704	40	457

<sup>1</sup> Reports received weekly.<sup>2</sup> Pulmonary.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

# Case Rates per 100,000 Population (Annual Basis) for the Month of December, 1931

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Small-pox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Maine.....	223	91	2, 156	21	212	0	93	18	146
New Hampshire.....		23			106			0	
Vermont.....	1, 084	7	1, 849	157	160	176	59	3	510
Massachusetts.....	250	71	337	204	410	0	103	9	199
Rhode Island.....	132	46	3, 796	216	240	0	79	2	47
Connecticut.....	345	23	180	126	187	69	102	9	167
New York.....	201	52	183	53	195	8	128	10	151
New Jersey.....	215	43	36	47	168	0	100	4	209
Pennsylvania.....	426	66	337	179	231	0	55	11	240
Ohio.....	429	93	93	118	361	13	97	12	286
Indiana.....	215	117	43	63	146	13	79	10	75
Illinois.....	223	91	25	20	209	13	162	13	189
Michigan.....	271	62	69	151	291	11	122	9	229
Wisconsin.....	701	37	91	340	152	17	60	2	332
Minnesota.....	214	55	32		118	16	57	7	44
Iowa.....	171	59	8	18	88	114	10	4	56
Missouri.....	123	132	12	7	123	12	60	8	144
North Dakota.....	232	91	83	21	153	84	21	3	19
South Dakota.....	256	62	463	69	103	74	8	24	86
Nebraska.....	138	75	52	40	94	22	12	6	15
Kansas.....	318	132	52	98	172	12	29	9	120
Delaware.....	191	260	29	64	162	0	39	15	147
Maryland.....	195	205	27	132	299	0	115	31	454
District of Columbia.....	64	155	14		193	0	179	7	167
Virginia.....	246	357	89		269	4	58	47	389
West Virginia.....	170	126	725		120	7	17	48	74
North Carolina.....	184	131	68		143	1		9	200
South Carolina.....	72	115	60	56	31		65	26	32
Georgia.....	32	45	4	8	41		29	14	10
Florida.....	19	42	3	25	28	2	29	12	10
Kentucky <sup>1</sup> .....									
Tennessee.....	31	118	22	21	94	9	52	30	71
Alabama.....	58	115	32	12	91	1	133	32	8
Mississippi.....	243	98	17	35	61	40	45	13	191
Arkansas.....	33	83	31	17	65	25	8	26	14
Louisiana.....	3	85	12	1	62	3	65	54	12
Oklahoma <sup>2</sup> .....	35	179	7	11	102	4	20	26	14
Texas.....		129			60			11	
Montana.....	394	9	1, 185	22	355	39	99	9	105
Idaho.....	343	18	13	92	160	61	21	13	
Wyoming.....	262	56	133	226	221	21	0	5	51
Colorado.....	454	34	22	64	167	22	38	7	67
New Mexico.....	604	257	63	74	164	3	183	82	16
Arizona.....	400	137	26	29	87	5	321	5	42
Utah <sup>1</sup> .....									
Nevada.....	89	13		38	102	0	13	0	254
Washington.....	382	25	388	44	145	07	112	9	36
Oregon.....	262	7	36	101	81	50	45	12	27
California.....	318	87	148	92	136	8	151	8	90

<sup>1</sup> Reports received weekly.<sup>2</sup> Pulmonary.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

## ADMISSIONS TO HOSPITALS FOR THE INSANE, FEBRUARY, 1930

Reports for the month of February, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 121 hospitals, located in 39 States, the District of Columbia, and the Territory of Hawaii. The 121 hospitals had 189,288 patients on February 28, 1930, 101,110 males and 88,178 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of February, 1930, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	11	2	13
2. Senile psychoses.....	202	104	306
3. Psychoses with cerebral arteriosclerosis.....	205	85	290
4. General paralysis.....	207	46	253
5. Psychoses with cerebral syphilis.....	21	18	39
6. Psychoses with Huntington's chorea.....	3	3	6
7. Psychoses with brain tumor.....	1	1	2
8. Psychoses with other brain or nervous disease.....	33	10	43
9. Alcoholic psychoses.....	106	8	114
10. Psychoses due to drugs and other exogenous toxins.....	15	14	29
11. Psychoses with pellagra.....	7	10	17
12. Psychoses with other somatic diseases.....	41	50	91
13. Manic-depressive psychoses.....	230	241	471
14. Involution melancholia.....	38	44	82
15. Dementia præcox (schizophrenia).....	377	254	631
16. Paranoia and paranoid conditions.....	33	43	76
17. Epileptic psychoses.....	58	34	92
18. Psychoneuroses and neuroses.....	26	49	75
19. Psychoses with psychopathic personality.....	21	8	29
20. Psychoses with mental deficiency.....	59	40	99
21. Undiagnosed psychoses.....	103	126	229
22. Without psychosis.....	183	59	242
Total.....	1,980	1,249	3,229

During the month of February, 1930, there were 3,229 new admissions to the hospitals, 61.3 per cent of these new admissions being males and 38.7 per cent females, the ratio being 159 males per 100 females. Four hundred and seventy-one of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,758 new admissions for whom provisional diagnoses were made. Of these patients, cases of dementia præcox constituted 22.9 per cent; manic-depressive psychoses, 17.1 per cent; senile psychoses, 11.1 per cent; psychoses with cerebral arteriosclerosis, 10.5 per cent; and general paralysis, 9.2 per cent. These five classes accounted for 1,951 patients, being 70.7 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on February 28, 1930:

	Male	Female	Total
Patients on books Feb. 28, 1930:			
In hospitals.....	91,760	80,900	172,660
On parole or otherwise absent, but still on books.....	9,350	7,278	16,628
Total.....	101,110	88,178	189,288

Of the 189,288 patients, 9,350 males and 7,278 females were on parole or otherwise absent but still on the books at the end of the month—9.2 per cent of the males, 8.3 per cent of the females, and 8.8 per cent of the total number of patients on the books.



## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 83,996,000. The estimated population of the 90 cities reporting deaths is more than 32,438,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended January 30, 1932, and January 31, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1,609	1,402	
97 cities.....	545	567	865
Measles:			
46 States.....	7,952	8,848	
97 cities.....	2,178	2,681	
Meningococcus meningitis:			
46 States.....	86	152	
97 cities.....	34	40	
Poliomyelitis:			
46 States.....	29	36	
Scarlet fever:			
46 States.....	5,412	5,880	
97 cities.....	2,188	2,160	1,575
Smallpox:			
46 States.....	449	1,028	
97 cities.....	30	112	57
Typhoid fever:			
46 States.....	261	165	
97 cities.....	34	31	83
<i>Deaths reported</i>			
Influenza and pneumonia:			
90 cities.....	753	2,008	
Smallpox:			
90 cities.....	0	0	

## City reports for week ended January 30, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

## City reports for week ended January 30, 1932

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	1	1	1	5	0	208	1	4
New Hampshire:								
Concord	0	0	0	0	0	0	0	0
Manchester	0	0	0	0	2	0	0	3
Nashua	0	0	0	0	0	1	1	0
Vermont:								
Barre	4	0	0	0	0	2	1	2
Burlington	0	0	0	0	0	38	0	0
Massachusetts:								
Boston	55	32	28	6	1	16	25	28
Fall River	3	4	2	1	1	6	2	2
Springfield	17	5	1	0	0	3	15	0
Worcester	7	5	2	0	0	0	57	4
Rhode Island:								
Pawtucket	0	2	0	0	0	0	0	0
Providence	8	8	6	0	0	567	14	3
Connecticut:								
Bridgeport	19	5	0	1	0	0	0	0
Hartford	4	5	0	1	0	0	15	3
New Haven	12	0	0	0	0	0	22	1
MIDDLE ATLANTIC								
New York:								
Buffalo	36	11	4	0	1	12	5	18
New York	140	199	122	39	8	48	129	153
Rochester	4	6	1	0	0	93	23	6
Syracuse	11	2	0	0	0	24	8	5
New Jersey:								
Camden	6	5	2	0	0	3	1	4
Newark	52	15	6	9	0	5	25	4
Trenton	5	2	1	4	0	1	7	3
Pennsylvania:								
Philadelphia	167	66	11	9	9	14	52	44
Pittsburgh	56	18	10	3	2	135	64	12
Reading	19	2	0	0	0	1	1	3
Scranton	4	0	1	0	0	0	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	5	8	13	0	2	0	0	10
Cleveland	80	32	15	28	0	156	126	21
Columbus	7	3	4	0	3	0	0	8
Toledo	52	5	0	1	1	4	4	9
Indiana:								
Fort Wayne	2	5	6	0	0	1	0	4
Indianapolis	49	6	1	0	0	5	135	14
South Bend	0	1	0	0	0	0	0	3
Terre Haute	2	1	2	0	0	1	0	1
Illinois:								
Chicago	141	95	49	25	8	63	9	60
Peoria	14	4	1	0	0	1	0	2
Springfield	3	1	1	3	1	0	8	3

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Michigan:								
Detroit.....	70	48	20	2	1	28	32	15
Flint.....	15	2	0	1	1	16	58	7
Grand Rapids.....	6	1	0	-----	2	31	10	2
Wisconsin:								
Kenosha.....	5	0	0	-----	0	0	0	0
Madison.....	8	1	0	-----	0	2	1	0
Milwaukee.....	81	16	3	1	1	44	47	12
Racine.....	24	0	1	-----	0	6	64	1
Superior.....	2	0	0	-----	0	2	40	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	14	0	0	-----	0	0	0	0
Minneapolis.....	20	15	5	-----	0	5	29	6
St. Paul.....	12	3	1	1	1	1	2	6
Iowa:								
Davenport.....	1	1	0	-----	-----	0	1	-----
Des Moines.....	1	1	0	-----	-----	1	0	-----
Sioux City.....	5	1	1	-----	-----	0	0	-----
Waterloo.....	7	1	0	-----	-----	0	0	-----
Missouri:								
Kansas City.....	24	5	11	-----	0	0	4	4
St. Joseph.....	8	1	1	-----	0	1	1	5
St. Louis.....	22	41	17	-----	0	1	2	5
North Dakota:								
Fargo.....	1	0	0	-----	0	30	0	1
South Dakota:								
Aberdeen.....	6	0	0	-----	-----	13	0	-----
Sioux Falls.....	0	0	0	-----	-----	0	0	-----
Nebraska:								
Omaha.....	14	4	7	-----	0	1	3	10
Kansas:								
Topeka.....	9	1	0	1	0	0	2	0
Wichita.....	35	2	9	-----	0	21	0	2
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	3	0	-----	0	0	0	2
Maryland:								
Baltimore.....	98	21	19	6	1	4	60	10
Cumberland.....	0	0	1	-----	0	0	0	5
Frederick.....	1	0	0	-----	0	0	0	0
District of Columbia:								
Washington.....	19	17	15	1	1	0	0	12
Virginia:								
Lynchburg.....	3	1	2	-----	0	0	0	3
Norfolk.....	2	1	2	-----	0	0	1	0
Richmond.....	9	5	10	-----	1	0	0	6
Roanoke.....	2	2	2	-----	0	0	4	0
West Virginia:								
Charleston.....	1	1	0	1	0	11	0	0
Huntington.....	0	-----	0	-----	0	1	0	0
Wheeling.....	1	0	0	-----	0	1	0	0
North Carolina:								
Raleigh.....	4	0	1	-----	0	16	0	0
Wilmington.....	1	0	0	-----	0	0	0	1
Winston-Salem.....	6	0	1	3	0	0	1	4
South Carolina:								
Charleston.....	0	2	0	47	0	0	0	0
Columbia.....	1	1	0	-----	0	0	0	5
Greenville.....	2	0	1	-----	-----	0	0	-----
Georgia:								
Atlanta.....	3	3	7	27	2	2	0	6
Brunswick.....	0	0	0	-----	0	0	1	2
Savannah.....	1	1	1	34	1	0	2	1
Florida:								
Miami.....	3	2	3	-----	0	0	1	0
Tampa.....	3	2	2	1	1	2	1	1

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington .....	0	0	1	-----	0	0	0	1
Lexington .....	9	-----	2	-----	0	0	10	2
Tennessee:								
Memphis .....	9	4	8	-----	0	0	0	4
Nashville .....	3	1	1	-----	3	0	0	2
Alabama:								
Birmingham .....	3	4	5	5	5	2	0	9
Mobile .....	0	1	3	1	0	0	0	4
Montgomery .....	3	1	2	1	-----	2	9	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith .....	1	0	0	-----	-----	0	0	-----
Little Rock .....	1	1	0	-----	0	2	5	1
Louisiana:								
New Orleans .....	1	15	28	10	9	0	0	14
Shreveport .....	2	1	1	-----	0	33	2	1
Oklahoma:								
Muskogee .....	1	-----	0	2	-----	1	1	-----
Tulsa .....	4	1	1	-----	-----	1	2	-----
Texas:								
Dallas .....	1	7	17	1	1	0	0	5
Fort Worth .....	3	5	4	-----	0	0	0	5
Galveston .....	0	1	1	-----	0	0	0	1
Houston .....	0	8	11	-----	0	0	0	6
San Antonio .....	0	3	4	-----	1	0	0	9
MOUNTAIN								
Montana:								
Billings .....	1	0	0	-----	0	0	0	0
Great Falls .....	2	1	0	-----	0	1	0	1
Helena .....	0	0	0	-----	0	51	0	0
Missoula .....	0	0	0	-----	0	0	0	1
Idaho:								
Boise .....	4	0	0	-----	0	0	0	2
Colorado:								
Denver .....	11	8	5	-----	4	6	32	11
Pueblo .....	24	2	0	-----	0	0	0	0
New Mexico:								
Albuquerque .....	3	0	3	1	0	0	1	0
Arizona:								
Phoenix .....	-----	-----	-----	-----	0	-----	-----	2
Utah:								
Salt Lake City .....	18	3	0	-----	2	1	0	1
Nevada:								
Reno .....	0	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle .....	43	3	1	-----	-----	256	9	-----
Spokane .....	7	1	0	-----	-----	6	0	-----
Tacoma .....	3	3	0	-----	1	8	0	4
Oregon:								
Portland .....	18	8	0	5	0	10	10	7
Salem .....	3	1	0	5	-----	0	2	-----
California:								
Los Angeles .....	104	38	28	150	2	2	7	20
Sacramento .....	23	2	1	6	0	93	0	12
San Francisco .....	43	13	3	13	1	128	4	14

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	3	3	0	0	0	2	0	0	0	0	23
New Hampshire:											
Concord.....	0	9	0	0	0	0	0	0	0	0	13
Manchester.....	2	5	0	0	0	0	0	0	0	0	14
Nashua.....		5	0	0			0	0		1	
Vermont:											
Barre.....	0	0	0	0	0	0	0	0	0	0	5
Burlington.....	1	0	0	0	0	0	0	0	0	2	11
Massachusetts:											
Boston.....	102	147	0	0	0	8	0	1	0	52	207
Fall River.....	4	3	0	0	0	2	0	0	0	2	23
Springfield.....	10	7	0	0	0	0	0	0	0	17	33
Worcester.....	13	31	0	0	0	1	0	0	0	14	43
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	1	0	0	0	16
Providence.....	16	22	0	0	0	3	0	0	0	22	72
Connecticut											
Bridgeport.....	10	2	0	6	0	2	0	0	0	2	20
Hartford.....	7	6	0	0	0	1	0	0	0	15	60
New Haven.....	7	26	0	0	0	1	0	0	0	7	38
MIDDLE ATLANTIC											
New York:											
Buffalo.....	28	92	1	0	0	8	0	0	0	23	147
New York.....	258	465	1	0	0	90	8	11	0	162	1,418
Rochester.....	11	72	0	0	0	1	0	0	0	7	70
Syracuse.....	13	18	0	0	0	1	0	0	0	72	53
New Jersey:											
Camden.....	7	24	0	0	0	0	0	0	0	1	29
Newark.....	31	20	0	0	0	7	0	1	0	42	114
Trenton.....	6	2	0	0	0	2	0	0	0	3	37
Pennsylvania:											
Philadelphia.....	109	189	0	0	0	27	2	3	0	287	462
Pittsburgh.....	37	53	0	0	0	6	0	0	0	35	161
Reading.....	4	6	0	0	0	1	0	0	0	13	25
Scranton.....		37		0				0		8	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	24	58	1	0	0	10	0	0	0	17	145
Cleveland.....	46	82	0	0	0	10	1	0	0	168	167
Columbus.....	14	13	0	0	0	7	1	1	0	29	98
Toledo.....	16	12	2	0	0	4	0	0	0	73	71
Indiana											
Fort Wayne.....	7	6	0	0	0	2	0	0	0	2	37
Indianapolis.....	14	8	5	0	0	4	0	0	0	17	
South Bend.....	4	3	1	0	0	1	0	0	0	2	16
Terre Haute.....	5	0	1	0	0	0	0	0	0	0	15
Illinois:											
Chicago.....	142	228	2	4	0	49	4	0	0	202	671
Peoria.....		2	1	0	0	1		1	0	8	28
Springfield.....	3	7	0	0	0	0	1	0	0	12	21
Michigan:											
Detroit.....	119	168	2	0	0	21	1	1	0	154	269
Flint.....	16	11	1	0	0	1	0	0	0	7	30
Grand Rapids.....	14	12	0	0	0	0	0	0	0	2	35
Wisconsin:											
Kenosha.....	2	8	1	0	0	0	0	0	0	1	8
Madison.....	4	4	0	0	0	2	0	0	0	7	15
Milwaukee.....	39	42	0	0	0	4	0	0	0	160	100
Racine.....	6	5	0	0	0	1	0	0	0	0	15
Superior.....	3	0	0	0	0	0	0	0	0	1	2
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	11	1	0	0	0	1	0	0	0	1	15
Minneapolis.....	47	37	2	0	0	3	1	0	0	9	74
St. Paul.....	30	16	0	0	0	1	0	1	0	11	74

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CEN- TRAL—continued											
Iowa:											
Davenport .....	2	9	2	0	-----	-----	0	0	-----	0	-----
Des Moines .....	8	7	2	1	-----	-----	0	0	-----	0	41
Sioux City .....	2	5	1	4	-----	-----	0	0	-----	3	-----
Waterloo .....	4	0	1	0	-----	-----	0	0	-----	6	-----
Missouri:											
Kansas City .....	19	14	0	0	0	3	0	0	0	52	86
St. Joseph .....	3	2	0	0	0	0	0	0	0	1	27
St. Louis .....	50	24	2	0	0	8	0	2	1	78	240
North Dakota:											
Fargo .....	3	0	0	0	0	0	0	0	0	3	6
South Dakota:											
Aberdeen .....	1	0	0	0	-----	-----	0	0	-----	11	-----
Sioux Falls .....	2	0	0	0	-----	-----	0	0	-----	0	7
Nebraska:											
Omaha .....	7	9	2	2	0	0	0	0	0	4	64
Kansas:											
Topeka .....	3	1	0	0	0	0	0	0	0	24	24
Wichita .....	6	3	0	0	0	0	0	0	0	0	15
SOUTH ATLANTIC											
Delaware:											
Wilmington .....	8	3	0	0	0	0	0	0	0	5	26
Maryland:											
Baltimore .....	37	45	0	0	0	12	2	0	0	151	200
Cumberland .....	1	2	0	0	0	1	0	0	0	0	15
Frederick .....	1	6	0	0	0	0	0	0	0	6	1
District of Colum- bia:											
Washington .....	27	18	0	0	0	7	1	0	0	9	150
Virginia:											
Lynchburg .....	0	1	0	0	0	0	0	2	0	9	14
Norfolk .....	3	5	0	0	0	1	0	0	0	1	-----
Richmond .....	7	12	0	0	0	3	0	1	0	4	47
Roanoke .....	1	8	0	0	0	0	0	0	0	2	17
West Virginia:											
Charleston .....	0	1	0	0	0	3	1	0	0	0	14
Huntington .....	-----	1	0	0	0	0	-----	0	0	0	0
Wheeling .....	2	0	0	0	0	3	0	0	0	8	14
North Carolina:											
Raleigh .....	0	0	0	0	0	0	0	0	0	3	11
Wilmington .....	1	6	0	0	0	1	0	1	0	13	10
Winston-Salem .....	1	1	1	0	0	1	0	0	0	9	14
South Carolina:											
Charleston .....	1	2	0	0	0	0	0	2	0	0	19
Columbia .....	0	2	1	0	0	0	0	0	0	0	19
Greenville .....	1	1	0	0	-----	-----	-----	-----	-----	2	-----
Georgia:											
Atlanta .....	5	1	1	0	0	2	0	0	0	0	80
Brunswick .....	0	0	0	0	0	0	0	0	0	0	2
Savannah .....	0	1	0	0	0	1	0	0	0	14	24
Florida:											
Miami .....	1	0	0	0	0	4	0	0	0	0	24
Tampa .....	1	0	0	0	0	1	1	2	0	2	25
EAST SOUTH CENTRAL											
Kentucky:											
Covington .....	3	7	0	0	0	1	0	0	0	0	15
Lexington .....	-----	1	-----	0	0	3	-----	2	1	12	10
Tennessee:											
Memphis .....	9	5	2	1	0	6	0	0	0	0	67
Nashville .....	2	0	0	0	0	1	0	1	0	7	42
Alabama:											
Birmingham .....	5	9	1	0	0	2	1	0	0	1	72
Mobile .....	1	0	0	0	0	0	0	2	0	0	26
Montgomery .....	1	1	0	0	-----	-----	0	0	-----	0	-----

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	1	0	0	0	0	0	0	0	0	-----
Little Rock.....	1	0	1	0	0	0	0	0	0	1	1
Louisiana:											
New Orleans.....	8	8	0	0	0	17	3	0	1	0	149
Shreveport.....	1	0	0	2	0	0	0	0	0	2	21
Oklahoma:											
Muskogee.....	1	1	2	1	-----	-----	-----	0	-----	3	-----
Tulsa.....	2	3	2	0	-----	-----	0	0	-----	1	-----
Texas:											
Dallas.....	6	11	1	0	0	2	0	0	0	3	55
Fort Worth.....	4	8	2	1	0	0	0	0	0	0	40
Galveston.....	0	0	0	1	0	1	1	1	0	0	11
Houston.....	4	8	6	2	0	4	0	0	0	0	47
San Antonio.....	1	0	0	0	0	8	0	0	0	0	76
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	10
Great Falls.....	4	1	0	0	0	0	0	0	0	0	10
Helena.....	1	0	0	0	0	0	0	0	0	0	9
Missoula.....	1	1	0	0	0	0	0	0	0	0	2
Idaho:											
Boise.....	0	1	0	1	0	0	0	0	0	0	4
Colorado:											
Denver.....	15	13	1	0	0	10	0	0	0	8	86
Pueblo.....	1	1	0	0	0	1	0	0	0	3	8
New Mexico:											
Albuquerque.....	0	0	0	0	0	3	0	0	0	0	6
Arizona:											
Phoenix.....	0	-----	0	-----	0	1	0	-----	0	-----	-----
Utah:											
Salt Lake City.....	4	7	0	0	0	1	0	0	0	0	27
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	13	8	3	0	-----	-----	1	0	-----	13	-----
Spokane.....	8	0	5	1	-----	-----	0	1	-----	0	-----
Tacoma.....	8	2	3	2	0	0	1	0	0	0	24
Oregon:											
Portland.....	6	4	10	3	0	0	0	0	0	4	64
Salem.....	0	0	-----	0	-----	-----	-----	0	-----	1	-----
California:											
Los Angeles.....	43	28	5	0	0	27	1	0	0	17	331
Sacramento.....	2	0	1	0	0	4	0	0	1	2	44
San Francisco.....	22	9	2	4	0	18	0	0	0	1	203

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Maine:									
Portland.....	0	1	0	0	0	0	0	0	0
Massachusetts:									
Boston.....	0	0	0	0	0	0	1	2	0
Springfield.....	0	0	0	1	0	0	0	0	0
Connecticut:									
Hartford.....	0	1	0	0	0	0	0	0	0

## City reports for week ended January 30, 1932—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomylitis (Infant paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	5	2	0	0	0	0	1	4	0
New Jersey:									
Newark.....	1	0	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	2	0	0	0	0	0	0	0	0
Pittsburgh.....	0	0	0	0	0	0	0	1	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Columbus.....	0	1	0	0	0	0	0	0	0
Indiana:									
Fort Wayne.....	0	1	0	0	0	0	0	0	0
Indianapolis.....	8	2	0	0	0	0	0	0	0
South Bend.....	1	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	0	0	0	0	0	1	0	0
Michigan:									
Detroit 1.....	0	1	0	0	1	0	0	0	0
Flint.....	0	1	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	2	0	0	0		0	0	0
<b>WEST NORTH CENTRAL</b>									
Missouri:									
Kansas City.....	1	1	0	0	0	0	0	0	0
St. Louis.....	2	1	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore 1.....	1	1	0	0	0	0	0	1	0
District of Columbia:									
Washington.....	2	2	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Georgia:									
Atlanta.....	0	1	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	2	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Lexington.....	0	0	0	0	0	0		1	0
Alabama:									
Birmingham.....	0	0	0	0	2	2	0	0	0
Mobile.....	1	0	0	0	1	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	0	0	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	2	0	0	0
<b>MOUNTAIN</b>									
Montana:									
Great Falls.....	0	0	0	0	0	0	0	1	1
Utah:									
Salt Lake City.....	1	0	0	0	0	0	0	1	0
<b>PACIFIC</b>									
Washington:									
Tacoma.....	0	1	0	0	0	0	0	0	0
California:									
Los Angeles.....	0	0	0	0	0	0	1	1	0
San Francisco.....	1	0	0	0	0	0	0	0	0

<sup>1</sup>Typhus fever, 2 cases: 1 case at Detroit, Mich., and 1 case at Baltimore, Md.



The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended January 30, 1932, compared with those for a like period ended January 31, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, December 27, 1931, to January 30, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding period of 1930-31*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931
98 cities.....	72	80	83	81	88	74	97	79	84	88
New England.....	84	116	79	79	86	91	50	108	96	106
Middle Atlantic.....	56	68	50	63	82	56	82	67	69	68
East North Central.....	64	91	76	96	108	95	97	93	68	110
West North Central.....	130	83	131	98	106	82	102	84	99	109
South Atlantic.....	71	62	114	85	91	69	108	65	120	73
East South Central.....	100	72	162	117	81	70	87	76	116	70
West South Central.....	129	136	204	142	195	108	260	81	204	183
Mountain.....	44	62	121	35	43	52	72	35	43	70
Pacific.....	64	55	65	61	97	47	99	88	63	45

## MEASLES CASE RATES

98 cities.....	191	281	300	351	278	324	346	405	334	418
New England.....	1,207	268	1,706	490	1,905	310	2,061	522	1,922	438
Middle Atlantic.....	93	101	146	178	116	158	154	251	149	306
East North Central.....	93	55	142	62	182	87	215	80	210	142
West North Central.....	38	1,804	157	2,156	78	1,829	150	1,994	114	1,521
South Atlantic.....	79	322	53	435	71	500	110	806	71	1,034
East South Central.....	29	921	17	869	6	1,004	17	705	23	916
West South Central.....	64	24	43	20	73	7	162	10	115	17
Mountain.....	513	317	1,172	226	517	374	518	757	509	496
Pacific.....	445	24	784	33	544	55	828	73	938	110

## SCARLET FEVER CASE RATES

98 cities.....	226	231	274	277	315	316	300	334	336	337
New England.....	539	327	549	433	582	539	640	575	614	519
Middle Atlantic.....	240	229	286	242	380	282	361	314	416	328
East North Central.....	233	261	298	363	335	398	312	384	388	377
West North Central.....	116	238	229	267	220	321	180	323	212	386
South Atlantic.....	221	262	227	277	239	305	218	343	214	313
East South Central.....	112	299	225	399	121	470	116	487	127	517
West South Central.....	108	108	69	68	99	129	82	142	92	112
Mountain.....	209	220	336	322	259	331	259	357	207	322
Pacific.....	109	73	141	73	129	73	128	120	89	148

## SMALLPOX CASE RATES

98 cities.....	3	7	6	13	4	16	5	16	5	17
New England.....	12	0	26	0	2	0	7	0	14	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	7	5	1	15	1	10	3	21	2	25
West North Central.....	4	46	6	63	17	98	13	77	11	84
South Atlantic.....	0	0	0	2	0	0	0	4	0	0
East South Central.....	0	0	23	6	12	18	23	29	6	18
West South Central.....	0	17	26	37	16	27	0	34	16	51
Mountain.....	9	9	9	9	9	78	4	9	9	0
Pacific.....	0	10	19	18	8	29	27	20	13	18

See footnotes at end of table.

*Summary of weekly reports from cities, December 27, 1931, to January 30, 1932—  
Annual rates per 100,000 population, compared with rates for the corresponding  
period of 1930-31—Continued*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 2, 1932	Jan. 3, 1931	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931
98 cities.....	15	5	4	4	15	5	17	16	5	15
New England.....	12	2	2	5	0	0	2	2	2	5
Middle Atlantic.....	3	4	5	2	4	2	4	3	7	2
East North Central.....	4	4	2	2	12	2	3	3	1	1
West North Central.....	2	2	2	0	2	4	4	10	6	12
South Atlantic.....	6	4	8	10	18	10	29	14	16	15
East South Central.....	35	48	0	12	29	53	12	12	17	18
West South Central.....	3	3	13	20	10	14	23	27	3	14
Mountain.....	0	18	9	17	9	9	10	17	0	0
Pacific.....	18	6	4	2	0	2	11	6	2	10

## INFLUENZA DEATH RATES

91 cities.....	13	16	18	24	14	36	12	52	13	70
New England.....	2	7	10	5	19	10	7	12	5	34
Middle Atlantic.....	5	17	12	29	12	59	8	91	9	102
East North Central.....	10	7	14	12	15	9	10	18	11	36
West North Central.....	9	3	9	21	3	18	6	29	3	29
South Atlantic.....	18	20	35	28	12	42	24	18	14	127
East South Central.....	25	26	31	45	44	64	44	64	50	76
West South Central.....	45	93	39	70	30	79	13	83	37	100
Mountain.....	131	18	103	44	103	35	27	44	52	52
Pacific.....	14	10	23	22	26	10	14	22	9	14

## PNEUMONIA DEATH RATES

91 cities.....	121	164	144	187	126	219	120	229	109	259
New England.....	91	166	165	113	103	159	113	178	113	185
Middle Atlantic.....	126	184	148	233	133	311	126	332	111	300
East North Central.....	84	103	104	110	122	124	79	126	96	176
West North Central.....	103	180	131	200	119	212	154	171	113	159
South Atlantic.....	174	230	196	267	208	237	186	281	114	345
East South Central.....	140	207	169	267	132	229	107	299	125	229
West South Central.....	152	199	128	238	148	228	165	245	125	204
Mountain.....	165	264	293	244	181	270	152	157	138	200
Pacific.....	175	135	167	134	158	118	123	103	116	115

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Spokane, Wash., not included.

<sup>3</sup> Fort Wayne, Ind., not included.

<sup>4</sup> Boise, Idaho, not included.

<sup>5</sup> Columbia, S. C., not included.

## FOREIGN AND INSULAR

### AZORES

*Bubonic plague.*—According to a recent report, there occurred in the district of Praia da Victoria (island of Terceira), Azores, 9 cases of plague with 4 deaths during the week ended November 23, 1931, and 7 cases with 2 deaths during the week ended November 30. In the district of Ponta Delgada (island of St. Michael), 2 cases were reported during the week ended November 21, and 3 cases with 1 death during the week ended December 5. The outbreak of plague in these two islands was thought to be due to an epizootic in the field rat. Measures were taken for the isolation of the patients, disinfection, discovery of cases, and protection from and destruction of rats.

### CANADA

*Provinces—Communicable diseases—Week ended January 23, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended January 23, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomy-elitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup> .....					
Nova Scotia.....		3			
New Brunswick <sup>1</sup> .....					
Quebec.....	1		3	1	5
Ontario.....	7	4		2	6
Manitoba.....	1			5	2
Saskatchewan.....				7	
Alberta <sup>1</sup> .....					
British Columbia.....				4	1
Total.....	9	7	3	19	14

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Vital statistics—August–November, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports births, marriages, and deaths, with deaths from certain causes, for the months from August to November, 1931, as follows:

	August	September	October	November
Estimated population.....	2,782,500	2,782,500	2,782,500	2,782,500
Births.....	6,290	6,590	6,151	5,914
Birth rate per 1,000 population.....	26.6	28.8	26.0	25.9
Marriages.....	1,574	1,877	1,730	1,034
Deaths.....	2,742	2,900	2,633	2,449
Death rate per 1,000 population.....	11.6	12.7	11.1	10.7
Deaths under 1 year.....	927	1,076	777	603
Deaths under 1 year per 1,000 births.....	147.4	163.3	126.3	102.0
Deaths from—				
Cancer.....	208	182	185	189
Cerebrospinal meningitis.....				1
Diabetes.....	33	35	32	30
Diarrhea.....	506	677	357	172
Diphtheria.....	12	26	21	43
Heart disease.....	240	263	281	289
Influenza.....	10	13	20	25
Lethargic encephalitis.....	2	3		1
Measles.....	2	2	4	6
Nephritis.....	151	140	149	108
Pneumonia.....	100	116	168	160
Pohomyelitis.....	11	57	39	10
Puerperal state.....	16	21	33	29
Scarlet fever.....	6	6	10	13
Syphilis.....	9	14	18	16
Trafic.....	62	44	51	35
Tuberculosis, pulmonary.....	175	171	143	155
Tuberculosis, other forms.....	52	48	43	46
Typhoid fever.....	17	27	24	33
Violence.....	143	69	86	75
Whooping cough.....	21	31	16	20

*Smallpox—Vancouver, British Columbia.*—According to a report dated February 8, 1932, there was an outbreak of smallpox in Vancouver, British Columbia, 33 cases, with 9 deaths having been reported since January 8, 1932. The situation was said to be under control.

#### CUBA

*Habana—Communicable diseases—Four weeks ended January 30, 1932.*—During the four weeks ended January 30, 1932, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis.....	1	1	Measles.....	20	-----
Chicken pox.....	1	-----	Scarlet fever.....	3	-----
Diphtheria.....	16	3	Tuberculosis.....	30	11
Malaria <sup>1</sup> .....	13	1	Typhoid fever.....	1	-----

<sup>1</sup> Many of these cases are from the island of Cuba, outside of the city.

## GERMANY

*Vital statistics—First and second quarters of 1931.*—According to figures published by the Federal Bureau of Statistics of Germany, the number of births, deaths, and marriages, together with the birth, death, and infant mortality rates for the first and second quarters of 1931, were as follows:

	1931	
	First quarter	Second quarter
Births.....	278,020	267,147
Stillbirths.....	8,938	8,085
Birth rate per 1,000 population.....	17.2	16.5
Deaths.....	218,631	182,752
Death rate per 1,000 population.....	13.6	11.3
Infant mortality rate per 1,000 live births.....	96	83
Marriages.....	96,691	146,290

The following table shows the death rate per 1,000 from certain causes during the second quarter of 1931 in German communities with a population of more than 15,000.

Cause of death	Death rate	Cause of death	Death rate
Accident.....	0.32	Pneumonia.....	0.73
Apoplexy.....	.79	Scarlet fever.....	.01
Cancer and other malignant growths.....	1.35	Senility.....	.67
Diphtheria.....	.05	Snicide.....	.32
Heart disease.....	1.23	Tuberculosis.....	.84
Influenza.....	.11	Whooping cough.....	.01
Measles.....	.02		

## MEXICO

*Mexico City—Influenza.*—According to a report dated January 31, 1932, there was a rather widespread epidemic of influenza in Mexico City, Mexico. The disease was said to be of a mild type.

## TRINIDAD

*Port of Spain—Vital statistics—December, 1930 and 1931.*—The following statistics for the months of December, 1930 and 1931, are taken from a report issued by the public health department of Port of Spain, Trinidad:

	December, 1930	December, 1931
Number of births.....	157	187
Birth rate per 1,000 population.....	27.4	31.4
Number of deaths.....	142	94
Death rate per 1,000 population.....	24.8	15.8
Deaths under 1 year.....	24	15
Deaths under 1 year per 1,000 births.....	152.9	80.2





Place	July, 1931	August, 1931	Sep- tember, 1931	October, 1931			November, 1931			December, 1931		
				1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31
Persia: <sup>1</sup>												
Abdan.....		1	3	1	9	37	1					
Ahwaz.....		12	103		7	31	1					
		7	98		18	80	45					
Khorrarnabad.....				10	10	65	30	9	1			
Mohammerah.....												
Philippine Islands: <sup>2</sup>												
Provinces—												
Capiz.....												
Cebu.....	35	79	12		4	16	7	13	4	4	5	9
	16	59	9		4	10	5	10	3	3	3	8
Blam.....	3											
	1											
	1											
Ayudhaya Province.....							1					
Bangkok.....	1						1			1		
On vessel.....												
S. S. Cathay, at Kobe, Japan, from Shanghai.....												
S. S. Kasagi Maru, at Moli, from Shanghai.....	4											
S. S. Ankoo, at Nagasaki, from Shanghai.....	1											
	2											
	1											
Indo-China (French) (see also table above):												
Cambodia <sup>3</sup> .....	241	12	14		1	16	2	3	1		2	1
	60	2	7		1	16	1				1	1
Cochin-China <sup>3</sup> .....	143	39	18		11	2	1	5	1		3	3
	42	32	13		10	2	1	4		8	5	2

<sup>1</sup> On Oct 23, 1931, cholera was reported at Mohammerah, Abadan, and Ahwaz, Persia. During the period from Oct. 22 to Nov. 7, 1931, 141 cases and 97 deaths were reported.

<sup>2</sup> Figures for cholera in the Philippine Islands are subject to correction.

<sup>3</sup> Reports incomplete.



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE

[C indicates cases; D, deaths; P, present]

Place	Weeks ended—													
	July		Aug.		Sept.		October, 1931				November, 1931			
	20-22, 1931	23-25, 1931	26-28, 1931	29-31, 1931	1-3, 1931	4-6, 1931	7	14	21	28	5	12	19	26
Algeria:														
Algiers.....	C	2												
Philippeville.....	C	2												
Argentina: Cordoba Province. <sup>1</sup>	D	1												
Azores:														
San Miguel Island.....	C								2	3				
Terceira Island.....	D								1	1				
Belgian Congo.....	C								9	7				
British East Africa (see also table below):	D								4	2				
Tanganyika.....	C	8	4	13										
Uganda.....	D	2	4	5										
Canary Islands: Palma Island—Los Llanos.....	C	285	289	276	71	87	60	41	38	31	35	28	13	
Ceylon: Colombo.....	D	281	237	270	69	84	58	39	35	30	34	24	15	
Chile:														
Plague-infected rats.....	D	6	3	4					1					
Santiago.....	D	6	3	3					1					
Plague-infected rats.....	C			1										
Valparaiso.....	C		1											
China:														
Shensi Province <sup>1</sup> .....	C													
Dutch East Indies:														
Batavia and West Java.....	C	58	65	113	28	34	38	39	44	39	40	75	64	
Java and Madura.....	D	58	65	113	28	34	38	39	44	39	40	75	64	
Bombay (see table below).	D	205	223	325	97	133	132	150	152	171	167	212	179	151



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

**PLAGUE--Continued**

[C indicates cases; D, deaths; P, present]

[illegible]

Place	July, 1931	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Place	July, 1931	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932
British East Africa (see also table above)—								Peru—Continued.							
Kenya.....	484	235	14	64	44	28		Chepen—Parasmayo.....					1		
Kenya.....								Eten—Chiclayo.....			1				
Almor Parish—Los Hoyos.....			1	3				Huancabamba—Ayacaba.....			1	7			
Amalusa Parish—Cungochaya.....				2				Huaura—Chancay.....			1	6			
Calves Canton—			4	1				Plague-infected rats.							
Carmanara.....								La Samana—Hualgayoc.....				1			
Ovelleria.....	1			1				Lima—Lima.....					4		
Celicia Canton—Chorras.....								Lima—Lima (haciendas).....					1		
Chimborazo Province—							3	Paljan—Trujillo.....					1		
Aldusi.....							8	Palulo—Hualgayoc.....					1		
Guamote.....								Patrovilca—Chancay.....					1		
Loja Canton—								Quispampa—Huancabamba.....				1			
Lopez.....			20					San Pedro—Parasmayo.....				1			
Nainuro.....				2				Supé—Chancay.....					1		
Paterillo.....	1			7				Senegal—							
Tuburo.....			1	1				Baol <sup>1</sup> .....	27	101	13	6	2		
Palas Canton—San Antonio.....	1		4	3		9	1	Dakar <sup>1</sup> .....	13	98	8	8	2		
Indo-China.....	1		4	1		5		Diourbel <sup>1</sup> .....	95	194	45	4			
Madagascar (see also table above).								Louga <sup>1</sup> .....	73	106	31	4			
Ambositra Province.....								Rufisque <sup>1</sup> .....			5		10		
Antistrabe Province.....								Thies <sup>1</sup> .....	3	2	10	1	5		
Maevatanana Province.....								Tivaouane <sup>1</sup> .....	1	1	4	2	10		
Miarinarivo Province.....									34	2	1	7	12		
Moramanga Province.....									16	26	12	1	7		
Tananarive Province.....									7	10	8	5	7		
Peru.....									3	7			1		
Baranca—Chancay.....									2						
Callao—Plague-infected rats.															

<sup>1</sup> Reports incomplete.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20-Oct. 17, 1931	Week ended—															
				October, 1931				November, 1931				December, 1931				January, 1932			
				24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	
Algeria:																			
Algiers.....																			
Constantine.....		1											1						
Brazil:																			
Porto Alegre (alastrim).....	34	48	46	7	21	3	23	9	8	15	19								
Santos.....	1	4	2		3					1									
Rio de Janeiro.....													1						
British East Africa: Tanganyika.....	19	50	1, 184		18			2					1						
British East Africa: Tanganyika.....		5	97		2														
British South Africa.....																			
Northern Rhodesia.....																			
Southern Rhodesia.....	26	3	1											1					
Canada:																			
Alberta.....	1		12	1	2	2	1		2	1			9						
British Columbia.....	5	2				1	1								2	1	4		
Manitoba.....								1									5		
Winnipeg.....		1																	
Nova Scotia.....																			
Ontario.....	5	6	17		7	3	5	3	2	5	1	10		2	2	3	2		
Kingston.....		1																	
North Bay.....																			
Ottawa.....		1	8		4	3	5									1			
Toronto.....																			
Quebec.....																			
Saskatchewan.....	26	33	11	11	3	1	18	12	5	9	8			2	1	10	21	7	
Regina.....			2																
Chile:																			
Santiago.....				2	1														
Tocopilla.....				1	1														
China:																			
Amoy.....	1	1	2	1		1	6	2	5	11	28	60	66	49	43	37	60	54	
Amoy.....	1	1	1	1		1	4		4	7	25	22	20	19	18	14	28	20	









## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place	July 26—Aug 23— Aug 22, Sept 19, 20—Oct. 1931	Sept 20—Oct. 17, 1931	Week ended—											
			October, 1931			November, 1931			December, 1931			January, 1932		
	24	31	7	14	21	28	5	12	19	26	2	9	16	23
Algeria:														
Algiers.....	C	1	1						1		3		1	
Bone.....	C	2												
Constantine Department.....	C	1	11	11	1		1	1	1			1	2	
Oran.....	C	1	1	1	1	2		2	1	14	1			
Bulgaria.....	C	1							1	1	1			
Chile:	D													
Antofagasta.....	C		1							1				
Santiago.....	C	3	19		3									
China:	C			12										
Manchuria—Harbin.....	C	1												
Shanghai.....	C	1												
Chosen (see table below).....	C													
Colombia: Cali.....	D	1												
Czechoslovakia (see table below).....														
Egypt:	C	2							3		1	1		
Alexandria.....	C		1							7				
Beheira.....	C	1						1						
Cairo.....	C		1						1					
Charbiel.....	C		1							1				
Greece (see table below).....	D													
Guatemala (see table below).....														
Irish Free State:	C								2					
Donegal County—Stranorlar.....														
Limerick County—														
Croom.....	C													
Glin.....	C	2												
Limerick.....	C	1												
Rathkeale.....	C							1						
Mayo County—	C													
Castlebar.....	C	1												
Westport.....	C	1												
Waterford County—Lismore.....	C										1			

Lithuania (see table below).

Mexico:

Guadalajara.

Mexico City, including municipalities in Federal District.

San Luis Potosi.

Torreon.

Morocco.

Palestine.

Paraguay: Asuncion.

Peru.

Poland.

Portugal: Oporto.

Rumania.

Tunisia: Tunis.

Turkey (see table below).

Union of South Africa:

Cape Province.

Municipality of East London.

Natal.

Orange Free State.

Transvaal.

Venezuela: Caracas (see table below).

Yugoslavia (see table below).

On vessel: At Antofagasta, from Iquique and points north.

Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	December, 1931
Chosen: Seoul	6	1	1	1	1	1	1
Id	1	1	1	1	1	1	1
Czechoslovakia	2	2	2	2	2	2	2
Greece	13	9	13	9	13	9	13
Id	2	2	2	2	2	2	2
Guatemala	33	34	3	3	3	3	3
Id	15	5	5	5	5	5	5

1 Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal region.







UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

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## SPECIAL ARTICLES

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Report of Tularaemia Infection in the Sage Hen  
The Health Officer's Viewpoint of Child Hygiene



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932

## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst Surg. Gen R. C. WILLIAMS, *Chief of Division*

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

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## TULARAEMIA: OCCURRENCE IN THE SAGE HEN,

*Centrocerus urophasianus*

Also Report of Additional Cases Following Contacts with Quail, *Colinus virginianus*<sup>1</sup>

By R. R. PARKER, *Special Expert*, CORNELIUS B. PHILIP, *Associate Entomologist*, and GORDON E. DAVIS, *Bacteriologist*, United States Public Health Service

A study of a recent localized epizootic among sage hens, *Centrocerus urophasianus*, in northeastern Fergus County, Mont., has resulted in the recovery of *Bacterium tulareense* from the tissues of dead and killed sage hens and also from infesting ticks of the species *Haemaphysalis cinnabarina*. These findings are of interest for three reasons: (1) They provide added evidence that at least some species of gallinaeous birds constitute a definite potential source of human infection; (2) they point to the bird tick, *H. cinnabarina*, a tick not heretofore incriminated as a carrier of tularaemia, as the most probable agent of the spread of this disease from bird to bird in the area studied; and (3) they afford additional reasons for believing that *Bact. tulareense* is deserving of serious consideration as one possible causal factor of the periodic epizootics that occur among various species of grouse, a question which has been of deep interest to game conservationists in recent years.

The possibility that *Bact. tulareense* may sometimes be concerned in the causation of epizootics among grouse was first suggested by one of the writers (Parker) in 1925, as a result of observations made in Montana incidental to studies of Rocky Mountain spotted-fever virus in nature. These observations were: (1) That the prevalence of tularaemia was known or suspected among the local rabbit populations in areas where grouse epizootics had occurred; (2) that rabbits and the several species of grouse observed were common hosts of the rabbit tick, *H. leporis-palustris*, a known carrier of tularaemia; (3) that the close habitat association between rabbits and certain game birds would facilitate the transfer of rabbit ticks from rabbits to birds and from birds to rabbits; and (4) that local epizootics which up to that time had been personally observed or had been reported to the station had all been in areas in which rabbits had been dying, the beginning of the grouse epizootic in each instance being

<sup>1</sup> Contribution from the Rocky Mountain Spotted Fever Field Station, Hamilton, Mont.

subsequent to the beginning of deaths among the local rabbits. This chronological relationship, it was thought, might be due in part at least to the fact that rabbit ticks, as observed in Montana, do not infest grouse until much later in the season than they do rabbits.

Similar observations of ruffed grouse epizootics in Minnesota by Green brought him independently to like conclusions.<sup>2</sup> These ideas led to tests of the susceptibility of various species of gallinaceous birds by Parker and Spencer,<sup>3</sup> by Parker,<sup>4</sup> and by Green,<sup>2,5</sup> but the results have not materially helped as regards the actual relationship of tularaemia to epizootics. The most suggestive data were the essentially simultaneous demonstration of a high degree of susceptibility among quail, *Colinus virginianus*, by Parker<sup>6</sup> and the recovery of *Bact. tularensis* from the tissues of a quail found dead in nature by Green.<sup>7</sup> Green's observation showed that tularaemia does occasionally, at least, infect birds in nature.

The first opportunity to secure actual field data was afforded in the late summer of 1931, when a correspondent in Lewistown, Mont., reported that during a 3-day open hunting season, August 13-15, dead and patently sick sage hens had been observed on a farm northeast of Roy, and also that numerous ticks had been noticed on killed birds. Tick specimens submitted were identified as *H. cinnabarina*.

A trip was made by one of us (Philip) to the affected area early in September; but owing to the unexpected isolation of the farm concerned and attendant difficulties of transportation, it was possible to spend only one and one-half hours on the ground. However, there were secured (a) one sage hen but recently dead and in good flesh; (b) one sage hen shot on the wing; (c) one recently dead jack rabbit; and (d) one cottontail which was killed. In addition, there were seen in the course of a 2-mile walk eight dead cottontails and six dead sage hens. All the latter appeared to be young birds. The farm owner reported rabbits as having died in greatest numbers in 1930, and sage hens in 1931, his information giving the impression of a subsiding epizootic.

On the recently dead sage hen there were 488 ticks, of which 30 partially to fully engorged females were dead, but still attached. On the one killed sage hen there were 180 ticks. All these ticks were *H. cinnabarina*—larvae, nymphs, and adults being present. On the cottontail there were 17 *H. leporis-palustris*, but the jack rabbit had been dead so long that any ticks, if present, had crawled from the carcass. The spleen and a piece of liver from each of the two sage

<sup>2</sup> Green, R. G., and Wade, E. M.: Proc. Soc. Exp. Biol. and Med., vol. 25, p. 515, 1928.

<sup>3</sup> Parker, R. R., and Spencer, R. R.: Sixth Bien. Rept., Mont. State Board of Entomology, p. 30, 1925-26.

<sup>4</sup> Unpublished data.

<sup>5</sup> Green, R. G., and Wade, E. M.: Proc. Soc. Exp. Biol. and Med., vol. 26, p. 637, 1928.

<sup>6</sup> Parker, R. R.: Pub. Health Rep., vol. 44, No. 17, p. 999, Apr. 26, 1929.

<sup>7</sup> Green, R. G., and Wade, E. M.: Proc. Soc. Exp. Biol. and Med., vol. 26, p. 626, 1928.

hens, and the heart and a piece of breast muscle from the dead grouse were preserved separately in glycerine. From the jack and cottontail rabbits pieces of heart, liver, and spleen were similarly preserved. A few tapeworms were the only macroscopic endoparasites observed.

A later trip (September 23 to 27) to the same area and adjacent territory was made. The farm owner reported that no additional dead birds or rabbits had been seen, and careful search revealed but two dead sage hens that could by any chance have died since the previous trip. These observations tended to confirm the impression of a subsiding epizootic. Within the epizootic area eight sage hens and one cottontail rabbit were shot. Eighteen sage hens, eight jack rabbits, and one cottontail were secured at distances varying from 2 to 10 miles from the farm. From the 26 sage hens a total of 1,450 *H. cinnabarina* and one *H. leporis-palustris* were collected. The highest *H. cinnabarina* count from a single bird was 377, the lowest 1, while 2 birds were uninfested. The average tick infestation of the 8 birds from the epizootic area was 154.34; the average of those from a distance was only 11.94. From the cottontail rabbit killed within the epizootic area 95 *H. leporis-palustris* were taken; from the other 9 rabbits only one tick was secured. It is worthy of note that this single tick was a specimen of *H. cinnabarina* from one of the jack rabbits. From each of 24 sage hens the spleen and pieces of lung, liver, and kidney were preserved in glycerine; blood samples were secured from 17 birds, of which 4 were grouse shot within the area.

The ticks and tissues secured were tested at the United States Public Health Service laboratory at Hamilton by the intraperitoneal and subcutaneous injection of salt solution emulsions into guinea pigs, and all tests noted as positive for tularaemia were verified by the isolation of *Bact. tularensis* in pure culture and the agglutination of the latter by known antitularaemic rabbit serum. From guinea pigs which died with suggestive but atypical lesions, tissue transfers were made to new guinea pigs and when necessary from these to a third group. Typical infection in some tests was discovered in an initial guinea pig and in others only in animals of the second or third group.

The following data are the records of tests and results secured with materials from the first trip:

*Dead sage hen.*—Eleven groups of 10 or 25 ticks each. The larval, nymphal, and adult ticks were segregated and were injected into separate guinea pigs; two groups were composed of 10 dead ticks each. Four guinea pigs were injected with spleen, two with heart, and two with breast muscle emulsion.

Four adult-tick-injected guinea pigs and one of each of the groups of two receiving heart and breast muscle, respectively, died of tula-

raemia. Of the four positive tick-injected guinea pigs, two were those which had received the dead ticks.<sup>8</sup>

*Killed sage hen.*—Six guinea pigs were injected with groups of 10 to 25 ticks each, 3 with spleen and 2 with liver emulsion.

One of the adult-tick-injected and one of the spleen-injected guinea pigs died of tularaemia.

*Dead jack rabbit.*—No ticks recovered. Two guinea pigs were injected with liver, two with heart, and four with spleen emulsion.

All the heart- and spleen-injected animals died of tularaemia. Those injected with liver remained well.<sup>9</sup>

*Killed cottontail.*—Six tissue-injected and one tick-injected (*H. leporis-palustris*) guinea pigs from this rabbit remained well.

The data for the tests of material secured during the second trip are as follows:

*Sage hens.*—A pooled emulsion of spleen, liver, kidney, and lungs of each sage hen was injected into three guinea pigs; all or a large portion of the ticks from each bird were injected into separate guinea pigs.

Only one of the tissue-injected guinea pigs died. The lesions were suggestive, however, and transfers resulted in typical infection. The remaining guinea pigs were killed, and autopsied on the 17th day. From several spleens which were slightly suspicious individual transfers were made to new guinea pigs, while all enlarged spleens not otherwise suggestive were pooled in groups of 10 and also injected in fresh animals. No typical infections resulted.

Of the 24 tick-injected guinea pigs, 3 died of tularaemia. Each of the latter had been injected with ticks from sage hens killed within the epizootic area. Ticks from the 18 sage hens shot at some distance from the area were negative.

None of the blood samples agglutinated *Bact. tularensae* and none was from tissue-positive or tick-positive grouse.

These data, though suggestive, can not be viewed as establishing a primary relationship between *Bact. tularensae* and the epizootic reported. The following points, however, have some bearing on this question:

1. The mortality among sage hens began subsequent to the beginning of an epizootic among rabbits in the same area.

2. Tularaemia infection was shown to be present among the local rabbit population and was the probable cause of the local rabbit mortality.

<sup>8</sup> It is possible that the deaths of these ticks were due to *Bact. tularensae*. Deaths of ticks suspected to have been due to tularaemia infection have occasionally been observed in *Dermacentor andersoni* and *D. variabilis*. It is not usual to find ticks dead *in situ*.

<sup>9</sup> It will be noted that all tests with preserved liver herein recorded are negative, though other tissues from the same animal in some instances were positive. This accords with Francis's observation that "liver is inimical to the life of the infection" in glycerine-preserved tissues. (Francis, Edward: Symptoms, Diagnosis, and Pathology of Tularaemia. Jour. Amer. Med. Assoc., vol. 91, p. 1145, Oct. 20, 1928.)

3. Of 10 sage hens secured in the epizootic area, 1 of them recently dead in nature, tularaemia was recovered from the dead and from 1 killed sage hen; all 10 were heavily tick infested; and ticks from 5 of the 10 were tularaemia-infected, an especially heavy concentration of infected ticks being indicated on the grouse found dead. Of 18 sage hens from outside the epizootic areas, the tissue of only 1 of the 16 tested yielded *Bact. tularensis*; all were either lightly tick-infested or carried no ticks; and none of these ticks was found infected. The number of ticks available for test, however, was relatively small as compared with the number tested from sage hens within the area.

4. It was improbable that the occurrence of *Bact. tularensis* in the affected sage hens came from any other source than a blood-sucking parasite, and can presumably be accounted for in one of two ways: (a) By an initial epizootic in the local rabbits, infection being subsequently carried to sage hens by the rabbit tick and then spread from bird to bird by the bird tick; or (b) by assuming that tularaemia is a long established infection in bird ticks and that the resultant prevalence of the infection in sage hens was largely or wholly independent of tularaemia infection among rabbits and the rabbit tick.

5. The negative agglutination tests are probably of significance only as indicating the absence of quite recent infection. This conclusion has been suggested by observations by the writers on certain wild birds and on domestic chickens and has been definitely proved in wild ducks, in which it has also been shown that agglutinins will reappear if subsequent injections of antigenic material are given (unpublished data).

The true significance of the above points can not be determined because (1) of the short period of time during which the epizootic was under observation; (2) there are no records which show the extent to which sage hens are normally infested with rabbit ticks (the present records were secured too late in the season to be of significance); (3) there are no reliable records to show whether or not *H. cinnabarina* infests rabbits and might derive tularaemia infection from this source (the single bird tick nymph from a jack rabbit herein recorded is the second such record known to the writers); (4) the nature of the sage hen tissue tests as made does not preclude the chance that some other bacterial or disease-causing parasite may have been present; (5) the susceptibility of sage hens to tularaemia has not been studied experimentally, but it is considered likely, from the present observations and experience with other birds, that they are normally fairly resistant. Among some gallinaceous birds we have evidence of a difference in the susceptibility of individuals. There may also be an age factor; and (6) because the evidence, though suggestive, is not fully conclusive that *H. cinnabarina* is a tularaemia-transmitting agent, although stage-to-stage transmission of infection by this tick

is certainly indicated by the fact that *Bact. tularensis* was recovered from ticks from three grouse but not from the grouse tissues, the seemingly obvious deduction being that, since *H. cinnabarina* is a "three-host tick," infection must have been acquired from the host of some antecedent stage of the ticks concerned.<sup>10</sup>

If sage hens are normally fairly resistant to tularaemia infection, the question is naturally suggested, How can *Bact. tularensis* be the main factor of an epizootic among these birds? However, that this eventuality is possible in an animal species having a considerable degree of resistance has been shown by Parker and Dade<sup>11</sup> in connection with extensive losses of sheep from tick-borne tularaemia epizootics in southern Idaho. The obviously possible processes involved are (1) an increased pathogenicity of the disease-producing agent, or (2) a lowering of animal resistance. It may be that the virulence of *Bact. tularensis* is at a low point during interepizootic periods, but is gradually enhanced with the increasingly frequent animal passage of the bacterium which must occur as the population of susceptible animals and of their accompanying numerous species of blood-sucking tularaemia-transmitting parasites is again built up. Green, in a recent paper, has briefly discussed possible changes of virulence of *Bact. tularensis* in nature as suggested by studies in Minnesota.<sup>12</sup> On the other hand, a lowered animal resistance is conceivable as a result either of heavy infestation by ticks or other parasites or of a massive, repeated, or continuous inoculation of the disease agent, such as could result from the simultaneous presence on the host of a considerable number of tularaemia-infected ticks or other parasites or repeated or continuous infestation by them. It is possible that increased susceptibility under such conditions may be the result of specific sensitization. In fact, in experimental studies at Hamilton the writers have observed in the highly susceptible guinea pig that animals injected with killed *tularensis* cultures and subsequently with viable organisms show at autopsy more accentuated and more extensive gross lesions than do those not previously injected.

The data here recorded concerning sage hens, bird ticks, and tularaemia do not detract from the significance of the independently secured epidemiological evidence of Parker and of Green relative to the potentialities of tularaemia in the rabbit-rabbit-tick-grouse

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<sup>10</sup> Deaths of turkeys infested with *H. cinnabarina* were reported in 1909 from Taftsville, Vt. On one farm, 40 of a flock of 46 young turkeys died. A parallel experience was reported from Fergus County, Mont., in 1926, a year during which tularaemia was epizootic in nature in the area concerned. Although an infectious disease factor was not suggested in either instance, a careful investigation of similar epizootics in the future, with this possibility in mind, might prove worth while.

<sup>11</sup> Parker, E. R., and Dade, J.: Jour. Amer. Vet. Med. Assoc., vol. 75, n. s. 28, No. 2, p. 173, August, 1929.

<sup>12</sup> Green, R. G.: Amer. Jour. Hyg., vol. 14, No. 2, p. 600, November, 1931.

complex in nature.<sup>13</sup> It is probable that the sage hen and the other gallinaceous birds that frequent sagebrush areas are, like the jack rabbit (which is their closest rabbit associate as regards both habits and habitat), relatively far more free from rabbit ticks than are those gallinaceous birds that are closely associated by habitat adaptation with snowshoe and cotton-tail rabbits. The latter birds and rabbits are commonly heavily infested, and not infrequently the number of ticks per host is almost unbelievable—many hundreds, and often even thousands. Under such conditions of infestation it is certain that when a tularaemia epizootic is in progress among rabbits, with every apparent opportunity for infecting immense numbers of rabbit ticks, numerous infected ticks must be picked up by the habitat-associated gallinaceous birds. What the result of such infestation actually is can be determined only by thorough studies of time-correlated rabbit and bird epizootics.

There are very few reports concerning the host relationships of the bird tick, although birds are without question the usual hosts. It has, however, been reported from cattle in Manitoba and once from a rabbit in British Columbia.<sup>14</sup> It is quite certain that it does not occur on rodents except accidentally, unless possibly on rabbits. The immature stages of the bird tick and the rabbit tick are superficially so similar that microscopic examination is necessary for differentiation, and well-qualified specialists have been known erroneously to identify *H. leporis-palustris* from birds as *H. cinnabarina*. It may be that a similar error has been made in the identification of ticks from rabbits.

In previous papers Parker<sup>15</sup> has called attention to two definite tularaemia cases and one possible case that could have resulted from direct or indirect contact with game birds (Columbian grouse, *Dendrogapus obscurus richardsoni*, and quail, respectively). In connection with the epizootic here concerned, A. C., a resident of Lewistown, has reported that he punctured a finger with a bone while dressing a sage hen shot during the 3-day open season in August, and that beginning a few days later he was ill for three weeks with aching muscles and marked prostration and that an ulcer developed at the site of the finger puncture. He did not consult a physician nor has it been possible to secure a blood sample.

Fergus County and Garfield County, which adjoins it on the east, are the only Montana counties in which tularaemia in man has been reported during 1931.

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<sup>13</sup> Parker has previously suggested that *H. cinnabarina* would be found to be a tularaemia-transmitting tick should it be determined that *Bact. tularensis* is a factor in grouse epizootics. Transactions of the Seventeenth American Game Conference, p. 232, 1931.

<sup>14</sup> Hewitt, C. G.: Trans. Roy. Soc. Can., vol. 9, sec. 4, p. 226, 1915.

<sup>15</sup> See footnotes 3 and 6.



Through the kindness of Medical Director Edward Francis we are able to include three cases of tularaemia following contacts with quail. The patient in the first case had dressed quail only; the other two patients had handled rabbits also. The agglutination tests were made at the National Institute of Health.

Mrs. A. C., aged 39, Adrian, Mo., house-wife, patient of Dr. Geo. W. Griffith, Garden, Mo., dressed five quail on November 18, 1929. She did not dress rabbits. She became ill on November 24 with fever, pain in right arm, chills. A sore on right thumb later became an ulcer. There was enlargement of the right epitrochlear and axillary glands without suppuration. Blood samples taken on December 9 and 22 agglutinated *Bact. tularensis* in dilutions of 1:160 and 1:1,280, respectively, but were negative against *Brucella abortus*.

H. T. P., male, aged 39, patient of Dr. T. E. Strain, Shreveport, La., punctured left middle finger with a quail bone just prior to dressing two rabbits on February 15, 1929. He became ill the next day with severe chill, followed by vomiting, headache, fever, and malaise. A punched-out ulcer developed at the site of the finger abrasion; the regional lymph glands became painful but had not suppurated by March 12. A blood sample taken on that date agglutinated *Bact. tularensis* in dilution of 1:1,280, but failed to agglutinate *Brucella abortus*.

C. W. K., male, aged 29, Ada, Okla., patient of Dr. Lee Riely, Oklahoma City, pricked terminal phalanx of right thumb November 20, 1929, with bone while dressing a quail. The patient had killed and dressed a rabbit a few days prior to November 20, but had handled none on the same day as that on which he dressed the quail. He became ill on November 27 with headache, vomiting, sweating, muscular pain, chills, and fever. The thumb lesion became an ulcer. The right axillary gland became enlarged and suppurated. Serum collected February 14, 1930, was tested both at the National Institute of Health and at the Oklahoma State Laboratory; *Bact. tularensis* was agglutinated by a 1:640 dilution.

#### SUMMARY

1. Data secured from a small area near Roy, Fergus County, Mont., during a period of mortality among local sage hens, have furnished added evidence that gallinaceous game birds are a potential source of human infection.

2. *Bact. tularensis* was recovered from the tissues of dead and killed sage hens, and also from ticks of the species *H. cinnabarina* with which the sage hens were infested.

3. It was not evident whether *Bact. tularensis* was the cause of the epizootic or a secondary or incidental factor. However, a comparison of data secured from both within and without the affected area has

shown that sage hens from within were much more heavily tick infested; they were the only ones shown to be carrying infected ticks; and that a higher percentage of the sage hens themselves were tularaemia-infected.

4. The evidence secured suggests that *H. cinnabarina*, a tick not previously incriminated, is a natural carrier of tularaemia.

5. Reports are included of a tularaemia case infected from quail, of two cases in which there was a possibility that infection was from quail, and of a possible case from dressing a sage hen.

## THE HEALTH OFFICER'S VIEWPOINT OF CHILD HYGIENE<sup>1</sup>

By TALIAFERRO CLARK, *Assistant Surgeon General, United States Public Health Service*

Child hygiene, beginning one generation ahead of disease, treating with the cause of bad health rather than with the effects, offers the most certain way of assuring a healthy adult generation. Child hygiene, therefore, is a great entering wedge for the entire public health program; and, as a means of assuring a generation free from disease, it occupies a peculiar position in the public health field. The problems of child health and protection are manifold, they stand in intimate relationship with every phase of public health administration, but fortunately, and quite naturally, they may be considered from the standpoint of varying periods and relationships of child life, such as prenatal and maternal care, the hygiene of early infancy, health protection and health promotion of preschool children, supervision of the health of the school child, protection of children from the health hazards of industry and other special groups, and from numerous other angles and approaches. There will be considered here only the problems of prenatal and maternal care, the neonatal and early infancy periods, touching only on some of the more important health problems of preschool and school children.

Comparisons of the census data over a number of years reveal the fact that the relative percentage of the total population of any particular age group of the population varies but little from year to year. Therefore the relative importance of the child health problem at different age periods, both in Iowa and in the death registration area, may be seen on reference to Table 1.

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<sup>1</sup> Read before the meeting of the Iowa Public Health Association held in Des Moines, Iowa, April 2-4, 1931.

TABLE 1.—Percentage of the population of 1920 and 1930 that were children in certain age groups, and the number and percentage of deaths from all causes in Iowa and the United States death registration area in 1928, in the same age groups

Age group	Per cent of population			Deaths in registration area, 1928			
	Iowa		United States	Iowa		United States	
	1920	1930	1920	Number	Per cent	Number	Per cent
Under 1 year.....	2.0	1.7	2.1	2,300	9.1	155,858	11.3
Under 2 years.....	4.1	(1)	4.3	2,601	10.3	185,037	13.4
2 to 4 years.....	6.3	(1)	5.6	463	1.8	31,053	2.3
Under 5 years.....	10.4	8.9	10.9	3,064	12.1	216,090	15.7
5 to 9 years.....	10.4	9.8	10.8	373	1.5	25,245	1.8
10 to 14 years.....	9.5	9.5	10.1	303	1.2	19,494	1.4
15 to 19 years.....	8.9	9.0	8.9	410	1.6	33,226	2.4
Under 10 years.....	20.4	18.7	21.7	3,442	13.6	241,335	17.5
Under 15 years.....	29.9	28.2	31.8	3,745	14.8	260,829	18.9
Under 20 years.....	38.8	37.2	40.7	4,155	16.4	294,055	21.3
Deaths in puerperal state.....				210	0.8	15,691	1.1

<sup>1</sup> Not available.

It will be observed that one-tenth of the deaths from all causes in Iowa occur in one-fiftieth of the population represented by infants under 1 year of age, and that approximately one-eighth of all the deaths in Iowa and one-sixth of the total deaths from all causes in the registration area occurred in approximately one-ninth of the population of Iowa and one-eighth in the registration area as represented by children under 5 years of age. These data are important as indicating the population groups among which more intensive protective measures are needed.

#### MATERNAL HYGIENE

The number of births in the birth registration area of the United States in 1928 was 2,233,149. This means that approximately two and a quarter million mothers went down into the "valley of the shadow," many of them without proper attention, without thoughtful care, without adequate service during this perilous period, with the result that more than 15,000 of them did not survive the ordeal, while uncounted numbers emerged crippled for life, less able to extend sheltering arms to the needs of the growing family. It is quite evident, therefore, that the provision of adequate supervision and proper instruction of expectant mothers is a prime objective of any well-organized child health movement. Numerous measures have been offered for the accomplishment of this task, but the problem resolves itself largely into the organization of prenatal clinics, classes, and conferences where expectant mothers may be taught those things it is necessary for them to know for their own protection and for the preservation of the unborn child. The adequacy of these provisions will depend in large measure on community support, the amount of funds available for such purpose and the number, experience, and

training of the personnel whose task it will be to make this information known. To be effective, the instruction given at clinics, in classes, and at conferences must be supplemented by visits to the home by properly qualified nurses else this advice and instruction will frequently be forgotten, misapplied, or neglected.

Moreover, there will be found in every community large numbers of mothers who will not or do not avail themselves of the opportunities for such instruction who may and should be reached by a series of simple, timely, plainly written monthly prenatal letters describing the things that expectant mothers should do and the things not to do at the various stages of pregnancy. The files of every State health organization that has adopted this plan, and those of the United States Public Health Service, contain many letters from mothers who have found such information a comfort and a help.

Also, effort should be made to encourage expectant mothers to place themselves under the care of a competent physician from the beginning of pregnancy and to remain under such supervision throughout its course instead of consulting their medical advisor in the last stages of gestation, as is so commonly the practice.

The imperative need for the health supervision of expectant mothers is revealed by the maternal mortality in the United States, which, on the basis of available reports, stands high among the countries of the world for which data are available. It may be that it is relatively higher on account of differences in the completeness of reporting, in statistical methods, and in the interpretation of the term "maternal mortality" in various countries. For example, during the great influenza year, 1918, there was a marked fall in the English maternal mortality rate whereas in the United States there was a rise in this rate from the previous year of approximately one-third. It is reasonable to assume that the percentage of mothers suffering from influenza who died during childbirth was no greater in the United States than in England. The inference is clear, therefore, that there must be a difference in the interpretation of the cause of death in this class of cases, and that statistics based on such differences are not strictly comparable. But it is true that the maternal mortality rate in this country does not show a downward trend. In fact, according to data studied by the United States Public Health Service, there was a rise of 8 per cent in the maternal mortality rate from all puerperal causes in the total registration area from 1915 to 1924—a rise of 14 per cent in the urban area and an increase of 5 per cent in the rural. The only decrease manifested in this period was in the rate for white rural mothers, which fell from 5.5 to 5.1, a decrease of 7 per cent.

In 1929 the total rural rate was 20 per cent lower than the urban—the white rate was 27 per cent lower, and the negro rate 15 per cent lower in the rural than in the urban.

Race exercises a distinct influence on the maternal mortality rate. In the total registration area from 1915 to 1928, both inclusive, in States having more than 2,000 negro births annually, the maternal mortality rate for whites was 6.5 and for negroes 11.6 per 1,000 births.

Considering all of the factors of maternal mortality during the last 15 years, it is found that sepsis is the greatest single cause of puerperal deaths, with a slight upward trend. Next in order of frequency are deaths from albuminuria and convulsions, which show a slightly downward trend.

The knowledge of these tendencies emphasizes the need for prenatal care, examination and instruction of the mother by competent trained personnel, persistent training and supervision of persons licensed to practice midwifery, preparation and widest distribution of educational material adapted to special capacities and individual needs, and the creation of more adequate lying-in facilities and obstetrical care in the management of normal labor and its complications.

#### THE PROBLEM OF STILLBIRTHS AND NEONATAL MORTALITY

The size of the stillbirth problem is not accurately known, not only because of the failure on the part of many physicians and midwives to report such births, but also because the rules and regulations for the reporting of stillbirths vary in the several States, ranging from the requirement that the product of every conception be reported to that applying only to fetuses of from six to seven months. In the year 1928, 89,765 stillbirths were reported from the birth registration area. Numerically, the problem of stillbirths is of greater magnitude than that of neonatal mortality.

Moreover, it is shown by further analysis of available data that the stillbirth rate in urban communities is approximately 10 per cent higher than in the rural districts, probably due to the less complete reporting in these areas. It is also found that the negro stillbirth rate is more than twice that for the whites, the difference being much greater than either the neonatal or the general infant mortality rates.

The complications of labor, syphilis, and the toxemias of pregnancy are the most common causes of stillbirths. Of these causes, syphilis offers the greatest promise of control. We are told that at least one pregnancy in every hundred in any group of society is terminated prematurely by the death of the fetus from syphilis; that of the 752,101 infants born in France in 1924 there were, due to syphilis, 42 abortions, 21 stillbirths, and 33 deaths of children under 1 year of age per 1,000 total births.<sup>2</sup>

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<sup>2</sup> *World's Health, Paris, 1925. VI, 524.*

Recent studies made by the Public Health Service point to the fact that there are not less than 1,000,000 new cases of venereal-disease infection in the United States each year. The crippling effect of gonorrhea on the female reproductive organs and the tremendous toll on fetal and neonatal life exacted by syphilis are mute evidence of the imperative need for more intensive work by public health authorities for the control of these diseases in all classes of the population.

#### NEONATAL PROBLEMS

In the year 1928 there were reported 83,086 deaths of children under 1 month of age in the birth registration area. It is important to note in this connection that while the total infant mortality rate steadily declined from 1916 to 1928 from 101 to 68, the neonatal rate fell only from 47 to 37. This difference is mute evidence that the concerted efforts of more than a decade have made but slight, if any, impress on the problem of neonatal deaths in comparison with the marked effect on the total infant mortality rate. It is highly probable that the causative factors of stillbirths and neonatal deaths are the same; therefore, the indications for the reduction of neonatal mortality are the more strict application of measures for the conservation of intrauterine life and the exercise of greater postpartum care by physicians and midwives in the examination, handling, and treatment of the newborn.

The instillation of drops in the eyes immediately after, or during, birth to prevent ophthalmia neonatorum, now a requirement in practically all of the States, should be religiously observed. Distinctly encouraging results follow the routine compliance with this legal requirement. The Proceedings of the 1929 Annual Conference of the National Society for the Prevention of Blindness show that in the schools for the blind, where records are carefully made, the cases of blindness due to ophthalmia neonatorum among children admitted to these schools decreased from 28 per cent in 1908 to about 9 per cent in 1928, largely due to the more general prophylactic treatment of the eyes of newborn babies.

There is increasing evidence that unrecognized respiratory infections are more and more frequently found on the autopsy of neonatal cases reported dead from unknown causes. This fact was first brought to the writer's attention by the late Clemens Pirquet, of Vienna, while serving with him as a member of the special commission of the Health Section of the League of Nations in 1926-1928. The greatest care must be exercised in the late stages of pregnancy, therefore, to protect the mother from exposure to colds and other respiratory infections and to exclude affected persons from the lying-in room and the nursery.

The toll of fetal life exacted by maternal syphilis in the early months of uterogestation is but slight, but in the seventh and eighth months of pregnancy it is an important cause of both stillbirth and neonatal deaths. It has been found by abundant experience that the institution of prompt and adequate treatment of syphilitic mothers discovered before the fifth month of pregnancy will permit of the birth of a healthy infant. Probably in no form of prenatal care are the results as great in preventing fetal and neonatal death as in the treatment of syphilis among expectant mothers.

According to Stokes, the death rate of a syphilitic family, once a child manages to come into the world at term, ranges from 8 to 10 per cent, and the proportion of sickly children ranges from 25 to 48 per cent. Solomon found a mortality of 20 per cent among children of syphilitic families and Jeans, in a survey of 100 families, found 22.7 per cent dead children.<sup>3</sup>

The census report on births, stillbirths, and infant mortality in the birth-registration area for 1924 assigns prematurity as the most important cause of death under one month; 43.9 of the total deaths in this age group. According to Kehrer, 29 per cent of the dead births in Germany in 1923 were due to syphilis, which also was the cause of death of 20 per cent of the cases of prematurity.<sup>4</sup>

#### INFANT HYGIENE

No constructive system of infant hygiene can be established in the absence of accurate knowledge of how many babies there are, where they are, and how healthy or sick they are. Important links in this chain are prompt birth registration, routine reporting of cases of communicable diseases, and accurate records of deaths. Armed with this information the health officer is in the best possible position to investigate the causes of unusual infant mortality, control threatened epidemics of communicable diseases, and promote other measures for the protection of infant health and life.

In common with other countries, there has been a marked decline in the general infant mortality rate in the birth registration area during the last 15 years. In Norway, the decline was from 90.3 in 1900 to 49.3 in 1928. In the city of Oslo the decline was still more marked, from 182.6 to 42.7 during this same period. However, the downward trend in infant mortality in the United States has not been uniform.

In the 15 years from 1915 to 1929 this rate has fallen in the birth registration area from 100 to 68, a reduction of 32 per cent. Up to 1921 the fall was rapid, a reduction of 24 per cent in six years. From 1921 on the fall was more gradual, less than 11 per cent.

<sup>3</sup> Stokes, John H.: *Modern Clinical Syphilology*. Philadelphia. Saunders, 1926. p. 1000.

<sup>4</sup> Kehrer, E.: *Zentralbl. f. Gynäk.*, Leipzig, 1923, XLVII, 226.

Moreover, careful study of the decline in the mortality over a period of years will indicate to the alert health officer that there are marked differences in the rates according to race and geographical location which must be taken into consideration, as shown by Table 2.

TABLE 2.—Percentage of decline in infant mortality for the birth registration area for white and negroes, and for urban and rural areas, from 1915 to 1928

	1915 to 1928	1915 to 1920	1921 to 1928		1915 to 1928	1915 to 1920	1921 to 1928
	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
White rates have fallen...	35	27	11	White urban.....	26	26	13
Colored rates have fallen...	41	40	2	Negro urban.....	29	29	5
Urban rates have fallen...	33	24	12	White rural.....	26	26	10
Rural.....	28	21	8	Negro rural.....	45	45	1

It is observed that the greatest fall during the period 1915 to 1920 was for the negro rural rate, 45 per cent, and the least for both the white urban and rural rate 26 per cent. During the second period, 1921 to 1926, the greatest fall was the white urban rate, 13 per cent, the least the negro rural rate, 1 per cent.

The noticeable slowing of the rate from 1921 on is due in part to the almost stationary neonatal rate, and in part to the better organization of public health administrative bodies, improvement in the domestic and civic environment, and the effect of the wider dissemination of health information rapidly reaching the saturation point, if the use of the term may be permitted. But there are still important problems remaining to be solved, and points of possible contact. Of these may be mentioned immunization against diphtheria at not less than 6 months of age, and smallpox before the infant is 1 year old.

#### THE PRE-SCHOOL CHILD

According to the census report of 1920, there were at that time in the United States 11,701,524 children 2 to 6 years of age, both inclusive, and in the State of Iowa 249,611. To the health officer this age group is of special interest, not only because of their number but also because children of this age are most easily impressed by discordant and insanitary environment and are more susceptible to the acute infectious diseases than at any other time of life. Moreover, it is the period of life during which there can more assuredly be corrected incipient physical defects that, if neglected, develop into serious physical handicaps in later life. It is also the period during which the nutritional needs require the greatest attention for the proper development of the child.

In 1928, the deaths among children under 5 years of age from whooping cough, approximately 6,000 in number, exceeded those from either diphtheria, scarlet fever, measles, or tuberculosis. The



number was greater than that of measles and scarlet fever combined—21 per cent greater than that from diphtheria and over 50 per cent greater than that from tuberculosis. It is increasingly prevalent from the first to tenth year.

The maximum incidence of measles is from the sixth to the seventh year of age, with the highest mortality about the third year. It is important to take cognizance of the rather frequent periodicity of epidemics of measles and to make special effort to protect susceptible age groups. The potentialities of the common cold must be guarded against. Rest in bed and isolation especially during the acute stages of colds should be encouraged and a physician should be called early in the disease, measures so successfully carried out during an outbreak which occurred in Syracuse, N. Y., in 1926-27.<sup>5</sup> During a previous epidemic, when no special effort at control was made, which occurred in 1923-24, there were reported 4,722 cases of German measles and measles combined, with a mortality rate of 1.38 per 100 cases, as against 5,317 cases of true measles reported during the 1926-27 outbreak with a mortality rate of 0.34 per 100 cases, representing 68 per cent reduction.

Among children under 1 year of age there were 119 cases with 9 deaths, a mortality rate of 7.6 during the previous epidemic, as compared with 164 cases with 5 deaths, or a rate of 3 in the 1926-27 epidemic. Of marked interest is the fact that in 726 cases of primary measles a physician was called in 653 cases before the fourth day of illness.

The susceptibility to diphtheria begins to increase from the second to the third year, with the maximum incidence from the fifth to the seventh year. Some idea of the value of diphtheria prevention work may be gained by the results of the 5-year campaign for the eradication of diphtheria in the State of New York which ended December 31, 1930:<sup>6</sup>

There were 23,326 fewer cases of diphtheria and 1,484 fewer deaths during 1926 to 1930 than in the 5-year period 1921 to 1925 preceding the toxin-antitoxin campaign. In the State, exclusive of New York City, deaths from the disease decreased from 337 in 1925 to 144 in 1930, while the number of cases dropped from 4,370 to 1,594. The diphtheria death rate has decreased from an average of 10.1 per 100,000 population for the period 1921 to 1925 to 3.8 for the years 1926 to 1930 during which approximately three-quarters of a million children were immunized against diphtheria with toxin-antitoxin. Of this number over 185,000 were under 5, the age group most susceptible to the disease and most likely to die from it.

It has been estimated that at least 35 per cent of the children under 5 years old must be protected against diphtheria before a community is safe from an epidemic of the disease.

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<sup>5</sup> George C. Rubland and A. Clement Silverman: What Can We do About Measles? *Amer. Jour. Pub. Health*, February, 1928, vol. 18, No. 2.

<sup>6</sup> *Health News*, New York State Dept. of Health, Vol. VIII, No. 8, February 23, 1931.

Approximately 75 per cent of all cases of scarlet fever occur by the sixth year and 90 per cent of the fatal cases under 10 years. Unfortunately, we are not yet in position to achieve such striking results by the use of scarlet fever streptococcus toxin for the control of scarlet fever as by immunization against diphtheria. At the Annual Conference of State and Territorial Health Officers with the United States Public Health Service, held at Washington in 1926, the following opinions were formulated regarding the use of scarlet fever streptococcus toxin, which apparently are as true to-day as then.

1. The intradermal reaction to scarlet fever streptococcus toxin is a fairly dependable measure of the susceptibility of the individual tested.

2. The majority of the individuals giving a positive reaction can be effectively immunized by the proper use of scarlet fever streptococcus toxin.

3. The use of scarlet fever streptococcus antitoxin, either for passive immunization or for the treatment of the individual ill with scarlet fever, is not yet founded on sufficient clinical data to permit a mature opinion as to the efficacy of this form of treatment.

According to Veldee,<sup>7</sup> there seems to be fairly general agreement that scarlet fever streptococcus toxin has found a definite field of usefulness in the active immunization of persons susceptible to scarlet fever, but agreement has not yet been reached as to the number of injections or the total dose of toxin required for the production of immunity. Also the time has not yet arrived for the proper evaluation of scarlet fever streptococcus antitoxin in the treatment of scarlet fever.

#### SCHOOL HEALTH SUPERVISION

There are approximately 27,000,000 children of school age in the United States of whom about 60 per cent are enrolled in rural schools. Large numbers of these children are without any form of health supervision whatever. Not only is the need for such supervision very great, but, also, the work in this field is most valuable, because it offers such ready approach to the solution of many of the neglected child health problems. School health service is frequently, and probably the best, beginning for rural child health work, because of the close association of the schools with the home through follow-up service, and the need to teach the rising generation the observance of proper health habits and the place of personal and general hygiene. The schools offer special advantages in this respect, because representatives from so many families in attendance are more readily accessible for health examinations and health instruction.

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<sup>7</sup> M. V. Veldee: Value of Scarlet Fever Toxin, Antitoxin and the Dick Test. Pub. Health Rep., August 8, 1930.

Unfortunately, health work in rural schools is confronted with two serious difficulties not so obvious in urban areas: (1) The lack of personnel for adequate medical supervision, and (2) the absence of facilities for the correction of hampering physical defects. At present and probably for a long time to come, without the aid of special grants, the only form of school health supervision possible in many of the outlying districts will be that furnished by the public health nurse.

The securing of the correction of physical defects is one of the most difficult of all the problems confronting the school health authority. These difficulties may be solved in part by the establishment of small hospitals in rural districts for this and for other health purposes, subsidizing medical service in the sparsely settled districts at State expense, and by organizing mobile dental, refraction, and ear, nose, and throat clinics for the relief of preschool and school children.

Success in child health work will depend on the ability of the official health agencies to function with thoroughness. One can not entirely disassociate the health problems of expectant mothers, infants, and older children from those of the general health programs. For these and other reasons, therefore, the declaration of principles and policies by the Committee on Public Health Organization of the White House Conference on Child Health and Protection, is of special interest, and is quoted in part as follows:

"1. The organized promotion of child health in the future will depend as it has in the past upon the quality of trained professional leadership for, and the organization and financial support of, full time administrative health services provided to benefit persons of all ages and of both sexes, in each community in our Nation.

"2. The health interests of the child as an individual, and as a member of the family, and of the community, are inseparable from those of adults, both men and women.

"3. Public health organization throughout the world, and in particular in the States, counties, and municipalities of this country, has recognized the wisdom of concentrating its administrative resources under one direction for a common purpose, whatever be the particular problem of preventive medicine uppermost in the public mind at the moment, or however great the immediate needs of a limited age or sex group in the community for which additional efforts or resources are required.

"4. The problems of health protection of the child show in common with those of the adult a great complexity of origins, consequently it is only through a centralized authority trained in the medical and biological sciences and with understanding of the fields of economics

and sociology that we may expect to obtain comprehensive and enduring results.

"5. No public health organization, Federal, State, or local which lacks provision for expert, specially trained direction for child health can be considered adequate for the needs of the American family of to-day.

"6. The best health service to the child is to be accomplished by inclusion of child health within a program of general health service applicable according to age and condition to all members of the community."

For these and other reasons an increasing number of authorities advocate the establishment of local boards of health wherever possible, not alone for general sanitation purposes, but as one of the first steps, if not the first step, for the most effective control of conditions harmful to the health of mothers and children. In rural sections the units may not necessarily be large, depending on the area, population, and resources of a particular community, with a minimum of at least one physician to serve as health officer aided by a well-trained public health nurse.

Furthermore, in nearly every political subdivision of a State may be found a number of nonofficial volunteer agencies, with local representatives already engaged in child health work. These should be drawn together and given scientific direction under centralized administrative control. The combined support of such agencies will be of the utmost value, and enable the local health authority successfully to attack some of the more fundamental problems relating to child life which otherwise could not be done for many years to come.

Unfortunately, not every community is ready and willing to organize a local board of health. In some places this is due to lack of funds; in others it is largely because of the failure to appreciate the need for, and the value of, the services of such an organization. In many of these communities it is possible to bring about the employment of a public health nurse at the expense of local public funds, or local funds supplemented by State aid or assistance from private sources. In fact, because of the present limited development of public health administration or lack of financial resources, the public health nurse is the main reliance in many rural districts for health supervision and instruction. Her ministrations are not infrequently instrumental in stimulating local interest and action to make more adequate provision for the protection of the community health.

It is not easy to say what form of child health supervision should be undertaken in a given district. Much will depend on the resources of the State health departments, the existence or otherwise of local health departments and their efficiency, the size of the district, the density of the population, the average wealth, intelligence and

education of the citizens, and the health problems most in need of attention.

To some the task may appear simple, but there is no royal road to success. Methods and measures which give good results in cities, in incorporated towns, and even in thickly settled rural areas, can not be employed successfully for the scattered rural population. Our knowledge of the principles of maternal and infant hygiene is ample, but the personnel and facilities for the application of this knowledge are lacking in many communities. Prenatal clinics, child hygiene centers, intensive school health supervision and other similar measures of tested worth are possible and effective, as a rule, directly as the density of population which connotes available funds and personnel.

It should be the duty of the official State health administrative body to establish policies, carry on research, standardize methods of procedure, maintain supervision, make surveys and furnish advice and assistance in planning and organizing local work. It should be the duty of the local boards of health to carry out the policies and apply the principles and procedure established by the State department of health with such modification as may be found necessary to meet the local conditions. In other words, the central body is a factory that builds the engine, the local body is the driver who turns on the steam, maintains the engine in good working order, and on whose endurance, knowledge, and skill satisfactory results will largely depend.

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## COURT DECISION RELATING TO PUBLIC HEALTH

*Narcotic act held constitutional.*—(California District Court of Appeal, Second District; *People v. Beesly*, 6 P. (2d) 114; decided Dec. 9, 1931.) The defendant was charged with violating the narcotic law by forging a prescription for narcotics. One of his contentions was that section 8 of the act (Deering's Gen. Laws, act 5994) was unconstitutional because violative of section 24 of article 4 of the State constitution, requiring that laws be published in no other than the English language. The argument made was that, while the words "cocaine," "opium," "morphine," and "heroin" were commonly recognized, the words describing other drugs in the same paragraph of the statute, viz, "codeine, alpha eucaine, beta eucaine, flowering tops and leaves, extracts, tinctures and other preparations of hemp or loco weed (*Cannabis sativa*) or peyote (anhalonium)," were not in the English language and that the statute was, therefore, void for uncertainty. The district court of appeal held the defendant's contention to be untenable. In this connection the court said:

\* \* \* Appellant's counsel, with a confidence deserving of a more substantial foundation, asserts that "Several of the above terms having a Latin derivation

can not be found in the English dictionary." However, on examination of our nearest available dictionary, Funk & Wagnalls New Standard Dictionary of the English language (copyright in 1919), we find that it defines "codeine," "eucaïne," "alpha" and "beta," "hemp," "cannabis," "loco weed," "peyote," and "anhalonium." The only word included in the quoted list which is not defined is lonely little "sativa." But, as the terms "cannabis sativa" and "anhalonium" are inclosed in brackets in the statute to indicate that they are the synonymous botanical names for the English words immediately preceding them, they are not necessary to the interpretation of the statute, may be treated as surplusage, and can not affect its validity. We might add that even a 1909 copyright edition of Webster's International Dictionary of the English Language defines all of the quoted words except "sativa," "peyote," and "anhalonium," and here in the Southwest "mescal" or "peyote" is certainly well enough known to be a part of our language even if it be but a mere spineless cactus. While the presence in the dictionary of the words in question disposes of counsel's argument by eliminating his major premise, we do not wish to be understood as holding that only those words which are found in an English dictionary are a part of the English language. When a word, whether coming from a foreign language or coined to meet a particular need of expression, has been used as an English word in speech or writing to such an extent that its meaning has become commonly understood by people dealing with the subject to which it relates, it becomes a part of the English language with the meaning attached to it by such use. Thus, even if the word "codeine" were not in the English dictionary, its use as an English word for more than a quarter of a century by people buying, selling, and using that drug would make it such. \* \* \*

## DEATHS DURING WEEK ENDED FEBRUARY 6, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended February 6, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Feb. 6, 1932	Correspond- ing week, 1931
Policies in force.....	74, 038, 950	75, 182, 838
Number of death claims.....	13, 795	16, 511
Death claims per 1,000 policies in force, annual rate.....	9. 7	11. 5
Death claims per 1,000 policies, first 5 weeks of year, annual rate.....	10. 0	11. 2

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended February 6, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Feb. 6, 1932				Corresponding week, 1931		Death rate for the first 5 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8,240	11.8	597	49	14.3	863	12.0	14.4
Akron.....	17	3.3	2	25	9.5	7	7.7	8.6
Albany.....	44	17.6	1	20	13.7	3	16.0	14.6
Atlanta.....	97	17.9	12	117	14.1	13	16.1	15.8
White.....	53	14.8	8	118	13.3	9	12.4	13.6
Colored.....	44	24.0	4	115	15.7	4	23.3	20.0
Baltimore.....	186	11.9	21	74	21.7	24	13.9	17.9
White.....	140	10.9	17	77	21.3	15	13.1	16.5
Colored.....	46	16.0	4	64	23.8	9	17.8	24.1
Birmingham.....	61	11.5	3	31	13.9	9	12.3	14.9
White.....	35	10.7	2	33	10.3	5	9.8	11.1
Colored.....	26	12.9	1	27	19.8	4	16.3	21.2
Boston.....	224	14.9	12	36	18.5	23	14.9	17.3
Bridgeport.....	27	9.6	1	18	14.5	4	11.6	14.8
Buffalo.....	140	12.5	16	77	15.7	14	13.2	14.6
Cambridge.....	22	10.0	2	41	16.9	2	13.5	13.8
Camden.....	32	14.0	1	18	21.9	3	14.7	18.7
Canton.....	24	11.6	2	50	11.2	1	10.2	10.7
Chicago.....	736	10.9	55	54	14.5	82	10.6	12.6
Cincinnati.....	151	17.1	14	90	18.0	13	16.1	18.6
Cleveland.....	185	10.5	18	58	11.7	17	10.8	11.1
Columbus.....	73	12.7	1	10	15.9	12	15.5	14.2
Dallas.....	66	12.2	9	-----	10.3	3	11.3	12.9
White.....	53	11.9	5	-----	7.4	2	10.7	11.6
Colored.....	13	14.0	4	-----	24.2	1	14.4	18.9
Dayton.....	47	10.3	3	43	10.1	5	10.3	11.8
Denver.....	77	13.7	6	59	13.3	7	17.7	16.1
Des Moines.....	29	10.4	3	51	8.7	1	11.1	12.4
Detroit.....	243	7.4	23	41	9.9	42	8.2	8.7
Duluth.....	23	11.8	2	58	10.8	2	9.5	12.4
El Paso.....	35	17.1	1	-----	19.4	11	16.2	21.1
Erie.....	23	10.1	1	21	8.0	5	9.8	10.9
Fall River.....	31	14.1	2	53	11.8	0	12.3	12.7
Flint.....	27	8.3	2	29	5.7	3	8.0	7.7
Fort Worth.....	40	12.3	4	-----	9.7	1	11.5	12.5
White.....	29	10.5	3	-----	9.7	1	10.2	11.9
Colored.....	11	21.5	1	-----	9.6	0	18.4	15.7
Grand Rapids.....	23	6.9	2	34	13.1	3	7.7	10.2
Houston.....	58	9.3	9	-----	9.8	4	10.4	12.9
White.....	37	8.1	7	-----	9.2	1	9.4	11.1
Colored.....	21	12.8	2	-----	11.3	3	13.3	14.6
Indianapolis.....	97	13.5	5	41	16.2	5	12.5	14.5
White.....	82	13.1	5	46	15.6	4	12.9	14.0
Colored.....	15	17.0	0	0	20.8	1	17.2	17.5
Jersey City.....	77	12.5	5	41	15.2	13	11.0	15.3
Kansas City, Kans.....	41	17.3	2	44	19.1	3	13.7	16.5
White.....	34	17.8	2	54	18.4	2	13.2	14.9
Colored.....	7	15.4	0	0	22.2	1	15.9	23.1
Kansas City, Mo.....	116	14.6	9	102	14.5	16	12.2	14.6
Knoxville.....	25	11.7	5	126	10.5	3	12.1	15.0
White.....	23	12.8	5	140	11.4	3	11.2	13.9
Colored.....	2	5.7	0	0	5.9	0	16.6	20.5
Long Beach.....	37	12.0	2	52	12.3	1	11.6	10.7
Los Angeles.....	339	12.8	20	59	10.4	21	12.8	13.0
Louisville.....	95	16.1	3	27	13.9	6	15.0	18.7
White.....	67	13.4	1	10	12.8	6	13.1	16.6
Colored.....	28	30.6	2	149	19.7	0	25.2	30.4
Lowell.....	40	20.9	1	26	15.1	3	15.4	15.5
Lynn.....	26	13.2	2	57	10.7	2	11.2	14.1
Memphis.....	87	17.3	3	33	17.5	9	16.9	17.8
White.....	39	12.5	2	34	15.7	4	12.9	15.5
Colored.....	48	24.9	1	30	20.6	5	23.3	21.4
Miami.....	29	13.3	1	28	15.8	1	13.9	13.1
White.....	24	14.2	1	39	13.8	1	15.2	12.8
Colored.....	5	10.3	0	0	22.7	0	15.7	14.9
Milwaukee.....	88	7.6	5	24	10.4	19	9.0	10.4
Minneapolis.....	102	11.1	6	39	13.1	14	9.4	10.4

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended February 6, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended Feb. 6, 1932				Corresponding week, 1931		Death rate for the first 5 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Nashville <sup>1</sup> .....	42	14.0	2	39	15.8	6	13.5	17.0
White.....	29	13.3	2	29	15.7	6	13.0	15.1
Colored.....	13	15.8	0	0	15.8	0	14.6	22.2
New Bedford <sup>2</sup> .....	27	12.5	4	115	13.9	4	11.8	13.0
New Haven.....	37	11.9	0	0	13.8	3	12.7	13.6
New Orleans <sup>3</sup> .....	141	15.5	14	80	20.3	18	15.8	21.1
White.....	79	12.3	11	90	15.7	6	13.1	17.9
Colored.....	62	23.6	3	49	31.7	12	22.4	29.0
New York.....	1,455	10.5	93	42	13.7	170	10.7	15.2
Bronx Borough.....	228	8.6	14	40	9.7	15	8.4	11.0
Brooklyn Borough.....	489	9.5	53	37	12.5	70	9.7	14.4
Manhattan Borough.....	557	16.4	35	50	20.7	61	16.5	22.6
Queens Borough.....	145	6.3	9	37	9.7	18	7.0	10.5
Richmond Borough.....	36	11.2	2	39	14.4	6	13.5	15.1
Newark, N. J.....	80	9.3	4	22	17.9	10	10.6	14.9
Oakland.....	77	13.5	6	75	9.3	3	12.2	12.3
Oklahoma City.....	31	7.9	2	27	12.2	8	9.9	11.8
Omaha.....	57	13.6	6	18	14.9	4	13.8	14.7
Paterson.....	35	14.2	5	91	19.2	4	13.6	16.4
Peoria.....	26	12.2	1	28	15.9	4	11.8	15.6
Philadelphia.....	488	12.9	36	58	18.0	54	12.7	17.7
Pittsburgh.....	191	14.6	22	101	16.5	28	13.6	16.8
Portland, Oreg.....	77	12.9	4	51	11.7	2	12.8	13.4
Providence.....	49	10.0	4	39	15.8	7	14.6	15.8
Richmond <sup>4</sup> .....	56	15.8	3	45	24.0	5	15.1	18.4
White.....	52	12.6	2	43	19.0	2	12.9	14.0
Colored.....	4	23.8	1	46	36.5	3	20.6	27.2
Rochester.....	67	10.3	4	38	11.8	7	11.9	13.1
St. Louis.....	202	12.7	7	25	19.1	22	14.6	17.3
St. Paul.....	55	10.3	4	43	8.9	3	9.8	10.8
Salt Lake City <sup>5</sup> .....	42	15.1	3	47	13.9	3	12.1	12.8
San Antonio.....	71	15.0	14	.....	15.4	8	14.5	16.4
San Diego.....	59	18.9	4	87	18.3	2	17.8	17.2
San Francisco.....	178	14.1	9	62	13.0	8	14.8	14.6
Schenectady.....	15	8.1	1	29	16.3	1	11.7	11.1
Seattle.....	90	12.5	3	30	10.9	1	11.9	12.7
Somerville.....	18	8.9	1	40	13.4	5	9.6	11.2
South Bend.....	22	10.3	2	58	6.3	1	8.8	7.1
Spokane.....	26	11.6	3	80	9.4	1	13.3	13.5
Springfield, Mass.....	43	14.6	2	34	16.4	3	12.9	13.8
Syracuse.....	45	10.9	5	64	12.7	5	12.7	13.3
Tacoma.....	30	14.5	0	0	14.5	0	12.0	13.9
Tampa <sup>6</sup> .....	29	14.0	0	0	16.4	2	12.3	16.4
White.....	25	15.3	0	0	15.7	1	11.9	14.9
Colored.....	4	9.2	0	0	18.8	1	13.8	22.1
Toledo.....	75	13.0	9	98	11.9	3	12.2	12.5
Trenton.....	31	13.1	1	20	23.6	2	14.9	19.5
Utica.....	24	12.2	3	85	15.3	2	17.0	16.9
Washington, D. C. <sup>7</sup> .....	155	16.4	8	45	20.0	9	15.8	19.1
White.....	97	14.2	7	57	17.7	4	14.0	16.6
Colored.....	58	22.2	1	18	25.9	5	20.5	25.6
Waterbury.....	23	11.8	2	66	15.0	1	9.8	11.2
Wilmington, Del. <sup>8</sup> .....	27	13.2	3	68	17.6	3	14.0	15.9
Worcester.....	51	13.4	1	14	19.6	4	12.7	16.7
Yonkers.....	18	6.6	3	77	12.8	2	7.4	12.0
Youngstown.....	32	9.5	2	32	9.3	5	10.0	10.9

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 18; Knoxville, 16; Louisville, 16; Memphis, 38; Miami, 23; Nashville, 23; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.



# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended February 13, 1932, and February 14, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 13, 1932, and February 14, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931
<b>New England States:</b>								
Maine.....	4	8	31	64	625	13	0	1
New Hampshire.....	1			212	20	73	0	0
Vermont.....				1	143	23	0	0
Massachusetts.....	57	50	13	154	373	505	0	2
Rhode Island.....	8	13		21	991	1	0	0
Connecticut.....	6	12	9	261	207	289	0	2
<b>Middle Atlantic States:</b>								
New York.....	146	106	181	179	1,461	760	8	15
New Jersey.....	49	45	37	236	104	633	4	6
Pennsylvania.....	128	98			1,806	1,880	4	12
<b>East North Central States:</b>								
Ohio.....	102	62	97	509	678	348	2	8
Indiana.....	56	39	75	111	102	684	4	0
Illinois.....	128	147	167	288	144	970	13	10
Michigan.....	40	48	9	111	441	179	2	6
Wisconsin.....	12	18	122	137	199	363	0	0
<b>West North Central States:</b>								
Minnesota.....	8	10	2	13	26	54	0	0
Iowa.....	17	9	4		6	11	0	3
Missouri.....	39	37	40	151	48	969	0	6
North Dakota.....	1	11			116	12	0	3
South Dakota.....	3	3	1,200	1	18	16	0	3
Nebraska.....	12	18	16	14	32	4	4	3
Kansas.....	31	9	43	22	96	18	0	2
<b>South Atlantic States:</b>								
Delaware.....		1	1	29		7	0	0
Maryland.....	34	21	14	1,040	21	433	0	3
District of Columbia.....	8	6	3	15	5	48	0	0
Virginia.....								
West Virginia.....	26	9	52	134	387	91	0	0
North Carolina.....	25	35	40	312	204	378	2	7
South Carolina.....	11	16	595	3,742	29	140	0	8
Georgia.....	12	10	144	1,933	4	132	1	4
Florida.....	16	9	1	229	1	148	4	2

<sup>1</sup> New York City only.

<sup>2</sup> Typhus fever, week ended Feb. 13, 1932, 10 cases: 2 cases in New Jersey, 1 case in South Carolina, 5 cases in Georgia, 1 case in Tennessee, and 1 case in Texas.

<sup>3</sup> Week ended Friday.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 13, 1932, and February 14, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931
<b>East South Central States:</b>								
Kentucky.....	49		361		50	189	2	3
Tennessee <sup>1</sup> .....	22	9	301	367	47	174	4	1
Alabama.....	46	15	54	332	3	411	2	7
Mississippi.....	12	16					0	4
<b>West South Central States:</b>								
Arkansas.....	6	21	31	223	6	3	0	2
Louisiana.....	35	21	14	189	26	3	3	2
Oklahoma <sup>2</sup> .....	41	40	747	265	19	27	0	0
Texas <sup>3</sup> .....	60	45	202	51	48	91	0	1
<b>Mountain States:</b>								
Montana.....	4	3	1, 138	10	30	1	0	0
Idaho.....	2			3	2	6	1	1
Wyoming.....		2	202		2	2	0	1
Colorado.....	13	9			37	205	1	2
New Mexico.....	14	4	64	83	55	22	0	1
Arizona.....	5	6	58	18	2	173	0	3
Utah <sup>4</sup> .....		1		18			3	1
<b>Pacific States:</b>								
Washington.....	4	9	2		488	50	0	0
Oregon.....	3	12	323	32	55	13	0	0
California.....	64	54	371	300	358	809	5	8
Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931
<b>New England States:</b>								
Maine.....	0	0	32	38	0	0	0	2
New Hampshire.....	0	0	42	3	1	0	1	0
Vermont.....	0	0	19	12	29	0	1	0
Massachusetts.....	0	1	471	378	0	0	7	2
Rhode Island.....	0	0	53	31	0	0	0	0
Connecticut.....	0	0	71	73	12	0	1	0
<b>Middle Atlantic States:</b>								
New York.....	6	4	1, 213	768	1	10	6	6
New Jersey <sup>1</sup> .....	2	0	244	280	0	0	3	2
Pennsylvania.....	0	2	833	550	0	0	23	7
<b>East North Central States:</b>								
Ohio.....	1	2	501	704	45	64	7	8
Indiana.....	1	0	106	308	13	82	2	2
Illinois.....	4	3	462	481	6	42	17	3
Michigan.....	1	2	364	366	2	31	2	5
Wisconsin.....	1	0	123	133	3	7	0	2
<b>West North Central States:</b>								
Minnesota.....	0	1	129	95	0	13	4	0
Iowa.....	0	0	59	136	79	64	0	0
Missouri.....	0	0	49	253	17	73	2	1
North Dakota.....	1	0	19	23	6	25	0	3
South Dakota.....	0	1	9	13	8	26	0	0
Nebraska.....	0	0	33	55	16	54	1	0
Kansas.....	0	0	64	71	1	77	0	2
<b>South Atlantic States:</b>								
Delaware.....	1	0	17	21	0	0	2	0
Maryland <sup>1</sup> .....	1	0	108	113	0	0	6	1
District of Columbia.....	0	0	23	25	0	0	1	0
Virginia.....								
West Virginia.....	2	1	46	30	0	8	12	1
North Carolina.....	1	1	82	77	2	1	4	3
South Carolina <sup>2</sup> .....	1	1	5	12	1	3	8	2
Georgia <sup>3</sup> .....	0	0	24	62	0	0	14	1
Florida.....	0	0	4	9	0	0	5	8

<sup>1</sup> Typhus fever, week ended Feb. 13, 1932, 10 cases: 2 cases in New Jersey, 1 case in South Carolina, 5 cases in Georgia, 1 case in Tennessee, and 1 case in Texas.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 13, 1932, and February 14, 1931—Continued*

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931	Week ended Feb. 13, 1932	Week ended Feb. 14, 1931
<b>East South Central States:</b>								
Kentucky.....	2	1	66	97	5	9	17	3
Tennessee <sup>1</sup> .....	0	0	44	47	31	5	8	3
Alabama.....	2	0	18	35	2	2	13	3
Mississippi.....	0	0	8	22	14	10	5	8
<b>West South Central States:</b>								
Arkansas.....	0	1	37	28	16	25	6	6
Louisiana.....	0	1	16	27	5	57	7	7
Oklahoma <sup>1</sup> .....	0	1	55	36	3	87	6	6
Texas <sup>1</sup> .....	0	0	72	46	16	60	6	8
<b>Mountain States:</b>								
Montana.....	0	0	44	56	3	1	2	0
Idaho.....	0	0	10	12	3	0	0	4
Wyoming.....	0	0	4	38	0	2	0	0
Colorado.....	0	0	23	47	0	7	2	1
New Mexico.....	1	0	15	5	8	1	0	0
Arizona.....	0	0	3	3	0	3	0	0
Utah <sup>1</sup> .....	0	0	7	13	0	0	0	1
<b>Pacific States:</b>								
Washington.....	2	1	28	46	18	30	0	2
Oregon.....	0	0	20	26	18	22	1	1
California.....	2	6	129	149	8	50	7	12

<sup>1</sup> Typhus fever, week ended Feb. 13, 1932, 10 cases: 2 cases in New Jersey, 1 case in South Carolina, 5 cases in Georgia, 1 case in Tennessee, and 1 case in Texas.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Men- gococ- cus men- ingitis	Diph- theria	Infl- uenza	Ma- lar- ia	Mea- sles	Pellag- ra	Pollo- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<b>January, 1932</b>										
Arizona.....	3	22	124	-----	15	-----	0	41	3	3
Iowa.....	2	92	-----	-----	14	-----	1	227	209	4
North Dakota.....	5	5	-----	-----	185	-----	2	82	107	5
Tennessee.....	18	198	289	26	71	8	2	311	66	82
Vermont.....	-----	-----	-----	-----	1,467	-----	0	44	63	1
Wyoming.....	-----	2	7	-----	7	-----	0	51	0	2

### January, 1932

<b>Chicken pox:</b>	<b>Cases</b>
Arizona.....	234
Iowa.....	267
North Dakota.....	176
Tennessee.....	151
Vermont.....	298
Wyoming.....	34
<b>Dysentery:</b>	
Tennessee.....	1
<b>German measles:</b>	
Arizona.....	2
Tennessee.....	3
<b>Hookworm disease:</b>	
Tennessee.....	1

<b>Impetigo contagiosa:</b>	<b>Cases</b>
Iowa.....	2
North Dakota.....	1
<b>Lethargic encephalitis:</b>	
North Dakota.....	2
Tennessee.....	3
<b>Mumps:</b>	
Arizona.....	6
Iowa.....	40
North Dakota.....	27
Tennessee.....	78
Vermont.....	449
Wyoming.....	35
<b>Ophthalmia neonatorum:</b>	
Tennessee.....	8

Paratyphoid fever:	Cases	Undulant fever:	Cases
North Dakota.....	1	Arizona.....	1
Puerperal septicoemia:		Iowa.....	8
Tennessee.....	4	Tennessee.....	8
Scabies:		Vincent's angina:	
Iowa.....	4	Iowa.....	4
North Dakota.....	1	North Dakota.....	22
Tennessee.....	3	Tennessee.....	1
Septic sore throat:		Whooping cough:	
Iowa.....	2	Arizona.....	25
Tennessee.....	14	Iowa.....	108
Wyoming.....	4	North Dakota.....	14
Trachoma:		Tennessee.....	259
Arizona.....	3	Vermont.....	280
Trichinosis:		Wyoming.....	8
Iowa.....	1		
Tularaemia:			
Iowa.....	1		
Tennessee.....	5		

### ADMISSIONS TO HOSPITALS FOR THE INSANE, MARCH, 1930

Reports for the month of March, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 115 hospitals, located in 39 States, the District of Columbia, and the Territory of Hawaii. The 115 hospitals had 181,784 patients on March 31, 1930, 97,109 males and 84,675 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of March, 1930, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	12	3	15
2. Senile psychoses.....	173	100	273
3. Psychoses with cerebral arteriosclerosis.....	176	100	276
4. General paralysis.....	226	46	272
5. Psychoses with cerebral syphilis.....	27	12	39
6. Psychoses with Huntington's chorea.....	4	1	5
7. Psychoses with brain tumor.....	2	0	2
8. Psychoses with other brain or nervous disease.....	23	13	36
9. Alcoholic psychoses.....	143	12	155
10. Psychoses due to drugs and other exogenous toxins.....	8	15	23
11. Psychoses with pellagra.....	5	15	20
12. Psychoses with other somatic diseases.....	44	31	75
13. Manic-depressive psychoses.....	199	215	414
14. Involution melancholia.....	23	35	58
15. Dementia pre-cox (schizophrenia).....	374	283	657
16. Paranoia and paranoid conditions.....	27	29	56
17. Epileptic psychoses.....	53	28	81
18. Psychoneuroses and neuroses.....	24	41	65
19. Psychoses with psychopathic personality.....	18	12	30
20. Psychoses with mental deficiency.....	64	41	105
21. Undiagnosed psychoses.....	103	90	193
22. Without psychosis.....	184	60	244
Total.....	1,912	1,182	3,094

During the month of March, 1930, there were 3,094 new admissions to the hospitals, 61.8 per cent of these new admissions being males and 38.2 per cent females, the ratio being 162 males per 100 females; 437 of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,657 new admissions for whom

provisional diagnoses were made. Of these 2,657 patients, cases of dementia præcox constituted 24.7 per cent; manic-depressive psychoses, 15.6 per cent; psychoses with cerebral arteriosclerosis, 10.4 per cent; senile psychoses, 10.3 per cent; and general paralysis, 10.2 per cent. These five classes accounted for 71.2 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on March 31, 1930:

	Male	Female	Total
Patients on books Mar. 31, 1930:			
In hospitals.....	87,935	77,663	165,598
On parole or otherwise absent, but still on books.....	9,174	7,012	16,186
Total.....	97,109	84,675	181,784

Of the 181,784 patients, 9,174 males and 7,012 females were on parole or otherwise absent at the end of the month—9.4 per cent of the males, 8.3 per cent of the females, and 8.9 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 95 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregated population of more than 33,805,000. The estimated population of the 88 cities reporting deaths is more than 32,245,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended February 6, 1932, and February 7, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1,413	1,263	
95 cities.....	509	498	839
Measles:			
45 States.....	8,113	10,172	
95 cities.....	2,901	3,030	
Meningococcus meningitis:			
46 States.....	83	133	
95 cities.....	28	60	
Pollomyelitis:			
46 States.....	39	27	
Scarlet fever:			
46 States.....	5,452	5,708	
95 cities.....	2,250	2,020	1,886
Smallpox:			
46 States.....	354	1,356	
95 cities.....	13	148	53
Typhoid fever:			
46 States.....	234	168	
95 cities.....	33	25	32
<i>Deaths reported</i>			
Influenza and pneumonia:			
88 cities.....	206	1,772	
Smallpox:			
88 cities.....	0	1	
Indianapolis, Ind.....	0	1	

*City reports for week ended February 6, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	4	0	0	1	0	252	0	10
New Hampshire:								
Concord.....	0	0	0		0	0	0	4
Manchester.....	0	0	0		2	0	0	4
Nashua.....	1	0	0			1	0	
Vermont:								
Barre.....	0	0	0		0	0	1	2
Burlington.....	0	0	0		0	16	1	0
Massachusetts:								
Boston.....	40	30	7	1	1	12	20	23
Fall River.....	4	4	5		1	6	0	4
Springfield.....	13	4	0	1	1	4	26	1
Worcester.....	15	4	3		0	1	58	2
Rhode Island:								
Pawtucket.....	0	1	0		0	0	0	0
Providence.....	16	7	4		1	694	7	2
Connecticut:								
Bridgeport.....	5	5	0		0	0	0	5
Hartford.....	8	5	1	1	0	0	24	2
New Haven.....	25	1	0	1	0	0	17	4
MIDDLE ATLANTIC								
New York:								
Buffalo.....	43	11	5		0	23	4	17
New York.....	182	193	125	102	11	43	138	145
Rochester.....	10	6	1		0	140	12	3
Syracuse.....	21	2	1		0	99	10	3
New Jersey:								
Camden.....	4	7	2		0	1	0	3
Newark.....	36	15	5	5	0	5	18	6
Trenton.....		2						
Pennsylvania:								
Philadelphia.....	112	64	16	13	4	11	53	23
Pittsburgh.....	39	30	9		2	189	55	20
Reading.....	14	2	0		0	0	0	2
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	1	8	6		2	0	0	18
Cleveland.....	84	33	13	22	1	190	88	17
Columbus.....	12	3	7		3	0	1	9
Toledo.....	37	4	3	3	2	12	0	7
Indiana:								
Fort Wayne.....	2	4	16		0	0	0	5
Indianapolis.....	59	6	4		0	1	60	14
South Bend.....	10	1	0		1	0	0	3
Terre Haute.....	0	0	2		0	0	0	2
Illinois:								
Chicago.....	100	96	55	44	8	131	6	71
Peoria.....	11		7		1	1	0	0
Springfield.....	1	0	0		0	0	4	1

## City reports for week ended February 6, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Michigan:								
Detroit.....	60	45	21	-----	3	36	11	15
Flint.....	9	2	0	-----	0	34	67	0
Grand Rapids....	9	2	1	-----	1	91	13	0
Wisconsin:								
Kenosha.....	6	0	0	-----	0	0	0	1
Madison.....	1	0	0	-----	0	3	0	1
Milwaukee.....	60	14	7	1	1	52	53	6
Racine.....	22	2	1	-----	0	4	111	0
Superior.....	2	0	0	-----	0	0	24	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	10	1	0	-----	0	0	0	0
Minneapolis.....	15	15	3	-----	1	2	24	13
St. Paul.....	11	3	2	1	1	1	10	3
Iowa:								
Davenport.....	2	0	0	-----	-----	0	0	-----
Des Moines.....	0	2	1	-----	-----	1	0	-----
Sioux City.....	3	1	2	-----	0	0	0	-----
Waterloo.....	9	1	0	-----	0	0	0	-----
Missouri:								
Kansas City.....	18	5	7	-----	0	1	1	13
St. Joseph.....	10	1	7	-----	0	0	0	0
St. Louis.....	21	39	12	3	1	4	6	8
North Dakota:								
Fargo.....	4	0	0	-----	0	35	1	1
South Dakota:								
Aberdeen.....	2	0	0	-----	-----	24	0	-----
Nebraska:								
Omaha.....	10	5	3	-----	0	0	0	12
Kansas:								
Topeka.....	19	1	2	1	1	0	0	0
Wichita.....	26	2	5	-----	0	48	0	5
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	0	-----	0	0	3	1
Maryland:								
Baltimore.....	69	23	15	20	2	3	85	12
Cumberland.....	2	0	1	-----	0	0	0	0
Frederick.....	0	0	5	-----	0	0	0	0
District of Columbia:								
Washington.....	23	16	16	2	1	0	0	27
Virginia:								
Lynchburg.....	2	2	0	-----	0	0	0	1
Norfolk.....	8	1	2	-----	0	0	1	3
Richmond.....	3	4	2	-----	1	0	0	7
Roanoke.....	3	1	0	-----	0	0	0	0
West Virginia:								
Charleston.....	7	1	0	2	0	47	0	1
Huntington.....	0	-----	2	-----	0	0	0	0
Wheeling.....	1	0	0	-----	0	0	0	1
North Carolina:								
Raleigh.....	1	0	0	-----	0	48	0	1
Wilmington.....	3	1	0	-----	0	0	0	2
Winston-Salem....	5	1	0	-----	0	0	0	2
South Carolina:								
Charleston.....	1	1	1	34	1	0	0	5
Columbia.....	0	0	0	-----	0	0	0	7
Greenville.....	0	0	0	-----	-----	0	0	-----
Georgia:								
Atlanta.....	8	3	1	27	2	0	1	13
Brunswick.....	0	0	0	-----	0	0	0	0
Savannah.....	1	1	0	57	1	0	1	4
Florida:								
Miami.....	0	1	5	-----	0	0	0	1
Tampa.....	0	2	2	-----	0	2	0	0

## City reports for week ended February 6, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....		1						
Lexington.....	1		2	1	0	2	10	3
Tennessee:								
Memphis.....	5	4	7		2	0	1	12
Nashville.....	0	0	4		2	0	0	4
Alabama:								
Birmingham.....	0	4	3	5	1	0	1	6
Mobile.....	0	0	1		1	0	0	1
Montgomery.....	0	2	0			0	0	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	1	0	0		0	0	1	0
Little Rock.....	1	1	1		3	2	3	1
Louisiana:								
New Orleans.....	1	14	15	6	4	0	0	11
Shreveport.....	5	2	0		0	46	1	6
Oklahoma:								
Muskogee.....	1		0	6		0	3	
Tulsa.....	9	2	3			0	0	
Texas:								
Dallas.....	8	7	14	1	1	12	0	7
Fort Worth.....	6	3	4		1	0	1	3
Galveston.....	0	1	2		0	0	0	2
Houston.....	0	7	13		1	0	0	14
San Antonio.....	0	3	1		0	0	0	10
MOUNTAIN								
Montana:								
Billings.....	3	0	0		0	5	0	0
Great Falls.....	3	0	0		0	0	0	0
Helena.....	0	1	0		0	22	0	0
Missoula.....	0	0	0		0	0	0	0
Idaho:								
Boise.....	0	0	0		0	0	2	0
Colorado:								
Denver.....	21	8	7		2	5	32	15
Pueblo.....	19	1	0		1	0	0	2
New Mexico:								
Albuquerque.....	1	0	4		0	1	3	3
Utah:								
Salt Lake City.....	8	2	0		3	1	0	6
Nevada:								
Reno.....	0	0	0		0	0	0	2
PACIFIC								
Washington:								
Seattle.....	19	4	0			56	5	
Spokane.....	4	1	0			4	0	
Tacoma.....	4	1	0		0	4	6	2
Oregon:								
Portland.....	9	7	1	3	2	22	4	8
Salem.....	3	0	0	25		0	1	
California:								
Los Angeles.....	130	34	34	167	3	10	8	27
Sacramento.....	26	1	0		0	136	1	7
San Francisco.....	54	13	4	8	2	88	0	7



## City reports for week ended February 6, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	4	3	0	0	0	0	1	0	0	13	35
New Hampshire:											
Concord.....	0	9	0	0	0	0	0	0	0	0	9
Manchester....	2	4	0	0	0	0	0	0	0	0	12
Nashua.....	0	0	0	0			0	0		0	
Vermont:											
Barre.....	0	0	0	0	0	0	0	0	0	0	4
Burlington....	0	0		0	0	0	0	0	0	0	13
Massachusetts:											
Boston.....	100	176	0	0	0	12	1	0	0	54	224
Fall River.....	4	7	0	0	0	2	0	0	0	0	31
Springfield....	10	4	0	0	0	2	0	0	0	5	42
Worcester.....	12	46	0	0	0	0	1	1	0	13	51
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	9
Providence.....	16	22	0	0	0	0	0	0	0	9	49
Connecticut:											
Bridgeport.....	10	3	0	1	0	1	0	0	0	0	27
Hartford.....	7	8	0	0	0	0	0	0	0	27	17
New Haven.....	7	16	0	0	0	1	0	0	0	16	37
MIDDLE ATLANTIC											
New York:											
Buffalo.....	30	75	0	0	0	6	0	0	0	27	138
New York.....	275	553	0	0	0	89	7	7	1	154	1,455
Rochester.....	11	62	0	0	0	3	1	0	0	4	63
Syracuse.....	12	17	0	0	0	0	0	0	0	63	45
New Jersey:											
Camden.....	7	25	0	0	0	1	0	0	0	4	32
Newark.....	33	21	0	0	0	6	0	0	0	50	83
Trenton.....	7		0				0				
Pennsylvania:											
Philadelphia....	108	184	0	0	0	29	2	0	0	282	488
Pittsburgh.....	35	60	0	0	0	17	0	1	1	40	194
Reading.....	5	4	0	0	0	2	0	0	0	18	27
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	24	36	1	0	0	4	0	1	0	1	151
Cleveland.....	49	63	0	0	0	11	1	1	0	163	185
Columbus.....	12	7	0	0	0	3	0	0	0	7	73
Toledo.....	15	10	2	0	0	3	1	0	0	74	75
Indiana:											
Fort Wayne.....	6	4	1	0	0	1	0	0	0	2	24
Indianapolis....	14	10	5	0	0	3	0	0	0	26	
South Bend....	2	1	0	0	0	1	0	0	0	3	22
Terre Haute....	5	2	0	0	0	0	0	0	0	0	15
Illinois:											
Chicago.....	145	227	2	0	0	30	3	1	0	158	736
Peoria.....		2		0	0	0		1	0	0	20
Springfield....	3	7	0	0	0	2	0	0	0	0	24
Michigan:											
Detroit.....	119	141	2	0	0	19	1	4	0	129	243
Flint.....	16	7	1	0	0	0	0	0	0	8	27
Grand Rapids..	15	7	0	0	0	2	0	0	0	0	23
Wisconsin:											
Kenosha.....	3	6	0	0	0	0	0	0	0	2	7
Madison.....	5	2	1	0	0	2	0	0	0	14	20
Milwaukee.....	39	26	0	0	0	7	0	0	0	148	86
Racine.....	7	1	0	0	0	0	0	0	0	2	10
Superior.....	3	0	0	0	0	0	0	0	0	0	

## City reports for week ended February 6, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	12	2	0	0	0	0	0	0	0	0	23
Minneapolis.....	44	64	0	0	0	1	0	0	0	2	102
St. Paul.....	29	14	0	0	0	4	0	0	0	3	63
Iowa											
Davenport.....	1	11	2	0			0	0		0	
Des Moines.....	8	5	2	0			0	0		0	20
Sioux City.....	2	5	0	3			0	0		2	
Waterloo.....	2	0	1	0			0	0		4	
Missouri											
Kansas City.....	19	21	1	0	0	7	0	0	0	26	116
St. Joseph.....	3	4	0	0	0	0	0	0	0	1	8
St. Louis.....	52	32	2	1	0	9	0	1	0	85	202
North Dakota.											
Fargo.....	2	1	0	0	0	0	0	0	0	0	3
South Dakota.											
Aberdeen.....	0	0	0	1				0		0	
Nebraska.											
Omaha.....	8	4	2	1	0	2	1	0	0	2	57
Kansas.											
Topeka.....	4	1	0	0	0	0	0	0	0	19	9
Wichita.....	6	2	0	0	0	1	0	0	0	1	32
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	7	8	0	0	0	0	0	0	0	2	27
Maryland:											
Baltimore.....	37	48	0	0	0	16	2	0	1	137	186
Cumberland.....	0	13	0	0	0	0	0	1	0	4	13
Frederick.....	1	4	0	0	0	0	0	0	0	1	3
Dist. of Columbia:											
Washington.....	26	23	0	1	0	14	0	0	0	23	155
Virginia:											
Lynchburg.....	1	5	0	0	0	0	0	0	0	14	7
Norfolk.....	3	3	0	0	0	1	0	0	0	0	
Richmond.....	5	10	0	0	0	5	0	0	0	2	56
Roanoke.....	3	3	0	0	0	1	0	0	0	1	19
West Virginia:											
Charleston.....	1	1	0	0	0	0	0	1	0	3	14
Huntington.....		0		0	0	0		0	0	0	0
Wheeling.....	2	1	0	0	0	0	1	0	0	8	16
North Carolina:											
Raleigh.....	0	2	0	0	0	1	0	0	0	1	16
Wilmington.....	0	3	0	0	0	0	0	0	0	16	10
Winston-Salem.....	2	3	1	0	0	3	0	0	0	16	12
South Carolina:											
Charleston.....	0	0	0	0	0	0	1	0	0	0	23
Columbia.....	0	1	0	0	0	1	0	0	0	0	24
Greenville.....		1	0	0				0		2	
Georgia:											
Atlanta.....	6	0	1	0	0	8	1	0	0	0	97
Brunswick.....	0	0	0	0	0	0	0	0	0	0	1
Savannah.....	1	0	1	0	0	4	0	0	0	6	33
Florida:											
Miami.....	2	1	0	0	0	0	0	0	0	0	20
Tampa.....	1	0	0	0	0	0	1	0	0	2	26

## City reports for week ended February 6, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	4		0				0				
Lexington.....		3		0	0	2		0	0	3	12
Tennessee:											
Memphis.....	10	13	2	0	0	7	0	0	0	16	87
Nashville.....	2	1	0	0	0	2	0	0	0	7	42
Alabama:											
Birmingham.....	2	6	1	0	0	3	0	2	0	2	61
Mobile.....	1	2	1	0	0	0	0	3	2	0	32
Montgomery.....	1	1	0	0			0	0		0	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	0	0	0	0	0	0	0	0	0	
Little Rock.....	1	1	0	0	0	2	1	0	0	7	8
Louisiana:											
New Orleans.....	8	10	1	0	0	14	2	2	1	0	141
Shreveport.....	1	1	1	1	0	2	0	0	2	4	45
Oklahoma:											
Muskogee.....		6		13				0		3	
Tulsa.....	2	6		1			0	0		1	
Texas:											
Dallas.....	6	9	2	1	0	1	0	1	0	0	66
Fort Worth.....	3	10	1	0	0	5	0	1	0	0	40
Galveston.....	1	0	0	0	0	1	0	2	0	0	17
Houston.....	4	9	6	2	0	3	0	2	1	0	58
San Antonio.....	1	2	0	0	0	5	0	0	0	0	71
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	6
Great Falls.....	4	0	0	0	0	0	0	0	0	0	9
Helena.....	0	0	0	0	0	0	0	0	0	0	4
Missoula.....	1	2	0	0	0	0	0	0	0	0	4
Idaho:											
Boise.....	1	2	0	0	0	0	0	0	0	0	7
Colorado:											
Denver.....	15	16	0	0	0	2	0	0	0	17	73
Pueblo.....	1	2	0	0	0	0	0	0	0	0	8
New Mexico:											
Albuquerque.....	0	0	0	0	0	5	0	0	0	0	17
Utah:											
Salt Lake City.....	3	7	1	0	0	0	0	0	0	0	18
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle.....	12	6	2	0			1	0		13	
Spokane.....	7	5	6	0			0	0		2	
Tacoma.....	4	2	3	0	0	1	0	0	0	0	30
Oregon:											
Portland.....	6	0	11	2	0	3	1	0	0	4	77
Salem.....	0	0		0				0		0	
California:											
Los Angeles.....	44	39	4	1	0	26	2	1	0	12	339
Sacramento.....	2	0	1	0	0	4	0	1	0	0	23
San Francisco.....	25	9	1	1	0	9	1	0	0	4	178

## City reports for week ended February 6, 1932—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
<b>Massachusetts.</b>									
Boston.....	0	1	0	0	0	0	0	1	0
Springfield.....	0	0	1	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
<b>New York:</b>									
New York.....	6	4	0	3	0	0	1	1	2
Rochester.....	1	0	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
<b>Ohio:</b>									
Cincinnati.....	1	1	0	0	0	0	0	0	0
Cleveland.....	0	0	0	0	0	2	0	0	0
<b>Indiana:</b>									
Indianapolis.....	3	2	0	0	0	0	0	0	0
South Bend.....	1	1	0	0	0	0	0	0	0
<b>Illinois:</b>									
Chicago.....	5	5	0	0	0	0	0	0	0
Peoria.....	1	1	0	0	0	0	0	0	0
<b>Michigan:</b>									
Detroit.....	2	1	0	0	0	0	0	0	0
<b>Wisconsin:</b>									
Racine.....	0	0	1	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
<b>Missouri:</b>									
Kansas City.....	0	1	0	0	0	0	1	0	0
St. Louis.....	2	1	0	0	0	0	0	1	0
<b>Nebraska:</b>									
Omaha.....			0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
<b>Maryland:</b>									
Baltimore.....	0	0	0	1	0	0	1	0	0
<b>District of Columbia:</b>									
Washington.....	0	0	0	0	1	1	0	0	0
<b>South Carolina:</b>									
Charleston <sup>1</sup> .....	0	0	0	0	2	1	0	0	0
Columbia.....	0	1	0	0	0	1	0	0	0
<b>Georgia:</b>									
Atlanta.....	0	0	0	0	2	1	0	1	0
Brunswick.....	0	0	0	0	0	1	0	0	0
<b>EAST SOUTH CENTRAL<sup>1</sup></b>									
<b>Alabama:</b>									
Birmingham.....	0	0	0	0	1	1	0	0	0
Mobile.....	0	0	0	0	1	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
<b>Arkansas:</b>									
Little Rock.....	0	1	0	0	0	1	0	0	0
<b>Louisiana:</b>									
New Orleans.....	0	0	0	0	1	1	0	0	0
<b>Texas:</b>									
Fort Worth.....	0	0	0	0	0	2	0	0	0
<b>MOUNTAIN</b>									
<b>Utah:</b>									
Salt Lake City.....	2	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
<b>Washington:</b>									
Seattle.....	1		0		0		0	0	
<b>California:</b>									
Los Angeles.....	0	1	0	0	0	0	0	2	0
San Francisco.....	0	0	0	0	0	0	0	0	1

<sup>1</sup> Typhus fever, 8 cases; 1 case in Charleston, S. C., 5 cases in Savannah, Ga., 1 case in Memphis, Tenn., and 1 case in Montgomery, Ala.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended February 6, 1932, compared with those for a like period ended February 7, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, January 9 to February 6, 1932 - Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931
98 cities.....	83	81	88	74	97	79	84	88	79	78
New England.....	79	79	86	91	50	106	96	106	48	84
Middle Atlantic.....	50	63	82	56	82	67	69	68	73	53
East North Central.....	76	96	68	95	97	93	68	110	79	96
West North Central.....	131	98	106	82	102	84	99	109	81	99
South Atlantic.....	114	85	94	69	108	65	120	73	84	75
East South Central.....	162	117	81	70	87	76	116	70	94	53
West South Central.....	204	142	195	108	260	81	204	183	152	156
Mountain.....	121	35	43	52	86	35	43	70	60	78
Pacific.....	65	61	97	47	99	88	63	45	72	69

## MEASLES CASE RATES

98 cities.....	300	351	278	324	346	405	334	418	448	473
New England.....	1,706	490	1,905	310	2,064	522	1,922	438	2,322	502
Middle Atlantic.....	146	178	116	158	154	251	149	306	228	363
East North Central.....	142	62	182	87	215	80	210	142	321	161
West North Central.....	157	2,156	78	1,829	150	1,984	114	1,521	172	1,489
South Atlantic.....	53	435	71	500	110	806	71	1,084	196	1,296
East South Central.....	17	869	6	1,004	17	705	23	916	0	1,034
West South Central.....	43	20	73	7	162	10	115	17	196	3
Mountain.....	1,172	226	517	374	509	757	509	496	284	1,123
Pacific.....	784	33	544	55	828	73	938	110	1,138	112

## SCARLET FEVER CASE RATES

98 cities.....	274	277	315	316	300	334	336	337	349	320
New England.....	549	433	582	539	640	575	614	519	705	534
Middle Atlantic.....	286	242	380	282	361	314	416	328	447	304
East North Central.....	298	363	335	398	312	364	388	377	325	331
West North Central.....	229	297	220	321	180	323	212	386	284	480
South Atlantic.....	227	277	239	305	218	343	214	313	245	305
East South Central.....	225	399	121	470	116	487	127	517	143	423
West South Central.....	69	68	99	129	82	142	92	112	106	88
Mountain.....	336	322	259	331	259	357	207	322	250	261
Pacific.....	141	73	129	73	128	120	89	143	116	145

## SMALLPOX CASE RATES

98 cities.....	6	13	4	16	6	16	5	17	2	28
New England.....	26	0	2	0	7	0	14	0	2	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	2
East North Central.....	1	16	1	10	3	21	2	25	0	12
West North Central.....	6	63	17	98	13	77	11	84	9	161
South Atlantic.....	0	2	0	0	0	4	0	0	2	0
East South Central.....	23	6	12	18	23	29	6	18	0	29
West South Central.....	26	37	16	27	0	84	16	51	13	81
Mountain.....	9	9	9	78	34	9	9	0	0	44
Pacific.....	19	18	8	29	27	20	13	18	4	24

See footnotes at end of table.

*Summary of weekly reports from cities, January 9 to February 6, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued*

### TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 9, 1932	Jan. 10, 1931	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931
98 cities.....	4	4	<sup>1</sup> 5	5	7	<sup>1</sup> 6	5	<sup>1</sup> 5	<sup>1</sup> 5	<sup>1</sup> 4
New England.....	2	5	0	0	2	2	2	5	2	2
Middle Atlantic.....	5	2	4	2	4	3	7	2	<sup>1</sup> 4	1
East North Central.....	2	2	<sup>1</sup> 2	2	3	3	1	1	4	2
West North Central.....	2	0	2	4	4	10	6	13	2	2
South Atlantic.....	8	10	18	10	29	<sup>1</sup> 14	16	<sup>1</sup> 8	4	<sup>1</sup> 18
East South Central.....	0	12	29	53	12	12	17	18	<sup>1</sup> 31	6
West South Central.....	13	20	10	14	23	27	3	14	23	24
Mountain.....	9	17	9	9	0	17	0	0	0	0
Pacific.....	4	2	0	2	11	6	2	10	4	0

### INFLUENZA DEATH RATES

91 cities.....	18	24	<sup>1</sup> 14	26	12	<sup>1</sup> 52	13	<sup>1</sup> 70	<sup>1</sup> 13	<sup>1</sup> 61
New England.....	10	5	19	10	7	12	5	34	10	46
Middle Atlantic.....	12	29	12	59	8	91	9	102	<sup>1</sup> 8	68
East North Central.....	14	12	<sup>1</sup> 5	9	10	18	11	36	12	52
West North Central.....	9	21	3	18	6	29	3	29	12	35
South Atlantic.....	35	28	12	42	24	<sup>1</sup> 38	14	<sup>1</sup> 127	16	<sup>1</sup> 129
East South Central.....	31	45	44	64	44	64	50	76	<sup>1</sup> 41	64
West South Central.....	30	76	30	79	13	83	37	100	30	73
Mountain.....	103	44	103	35	26	44	52	52	52	52
Pacific.....	23	22	26	10	14	22	9	14	12	12

### PNEUMONIA DEATH RATES

91 cities.....	144	187	<sup>1</sup> 126	219	120	<sup>1</sup> 229	109	<sup>1</sup> 259	<sup>1</sup> 119	<sup>1</sup> 231
New England.....	165	113	103	159	113	178	113	185	144	296
Middle Atlantic.....	148	233	133	311	126	332	111	369	<sup>1</sup> 103	293
East North Central.....	104	110	<sup>1</sup> 82	124	70	126	96	176	96	175
West North Central.....	131	200	119	212	154	171	113	159	160	136
South Atlantic.....	196	267	208	237	180	<sup>1</sup> 281	114	<sup>1</sup> 345	165	<sup>1</sup> 325
East South Central.....	169	267	132	229	107	299	125	229	<sup>1</sup> 157	178
West South Central.....	128	238	146	228	165	245	125	201	172	214
Mountain.....	293	244	181	270	147	157	138	200	215	209
Pacific.....	167	134	158	118	123	103	116	115	100	72

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Fort Wayne, Ind., not included.

<sup>3</sup> Columbia, S. C., not included.

<sup>4</sup> Trenton, N. J., and Covington, Ky., not included.

<sup>5</sup> Trenton, N. J., not included.

<sup>6</sup> Covington, Ky., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended January 30, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended January 30, 1932, as follows:

Province	Influenza	Lethargic encephalitis	Polio-myelitis	Smallpox	Typhoid fever
Prince Edward Island.....	3				
Nova Scotia.....	5				
New Brunswick <sup>1</sup> .....					
Quebec.....			4		13
Ontario.....	5	1	1	5	
Manitoba.....					8
Saskatchewan.....				35	
Alberta (no report received).....					
British Columbia.....				8	2
Total.....	13	1	5	48	18

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended January 30, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended January 30, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	105	Polio-myelitis.....	4
Diphtheria.....	41	Scarlet fever.....	87
Erysipelas.....	8	Tuberculosis.....	42
German measles.....	4	Typhoid fever.....	18
Measles.....	304	Whooping cough.....	64

### JAMAICA

*Communicable diseases—Four weeks ended January 30, 1932.*—During the four weeks ended January 30, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis.....		4	Leprosy.....		8
Chicken pox.....	5	13	Puerperal fever.....		5
Diphtheria.....		5	Tuberculosis.....	45	71
Dysentery.....		4	Typhoid fever.....	12	74
Erysipelas.....		1			

## PANAMA CANAL ZONE

*Communicable diseases—December, 1931.*—During the month of December, 1931, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	33	-----	Measles.....	26	-----
Diphtheria.....	11	-----	Mumps.....	1	-----
Dysentery (amebic).....	6	1	Pneumonia.....	-----	31
Dysentery (bacillary).....	1	1	Scarlet fever.....	1	-----
Leprosy.....	1	-----	Tuberculosis.....	-----	33
Malaria.....	68	5	Whooping cough.....	13	3

## PORTO RICO

*San Juan—Communicable diseases—Four weeks ended January 30, 1932.*—During the four weeks ended January 30, 1932, cases of certain communicable diseases were reported in San Juan, Porto Rico, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	3	Measles.....	50
Diphtheria.....	7	Mumps.....	4
Filariasis.....	3	Typhoid fever.....	1
Malaria.....	44	Whooping cough.....	3







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

(C indicates cases; D, deaths; P, present)

Place	Week ended—																	
	July 20- 26, Aug. 22, 1931	Aug. 20- 26, Sept. 19, 1931	Sept. 18- 24, Oct. 17, 1931	Oct. 18- 24, Nov. 14, 1931	November, 1931							December, 1931				January, 1932		February, 1932
					November, 1931							December, 1931				January, 1932		
					21	28	5	12	19	26	2	9	16	23	30	6	13	
Siam.....	1	1																
Ayudhaya Province.....		1																
Bangkok.....	1																	
On vessel:																		
S. S. Cathay, at Kobe, Japan, from Shanghai.....	4																	
S. S. Kasagi Maru, at Moji, from Shanghai.....	1																	
S. S. Ankoo, at Nagasaki, from Shanghai.....	2																	
	1																	
Indo-China (French) (see also table above):																		
Cambodia.....	241	12	14														1	9
	60	2	7														1	2
Cochin-China.....	143	39	18														2	1
	42	32	13														1	1

\* Reports incomplete.

## PLAGUE

[C Indicates cases; D, deaths; P, present]

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Week ended—																
				October, 1931			November, 1931				December, 1931				January, 1932					
				24	31		7	14	21	28		5	12	19	26		2	9	16	23
Algeria:																				
Algiers.....	C	2																		
Philippeville.....	C	2																		
Argentina: Cordoba Province. <sup>1</sup>	D	1																		
Azores:																				
San Miguel Island.....	C									2	3									
Tercera Island.....	C									9	7									
Terceira Island.....	D									4	2									
Belgian Congo.....	C																			
British East Africa (see also table below):																				
Tanganyika.....	C	8	4	13																
Uganda.....	D	2	4	5																
Canary Islands: Palma Island—Los Llanos.....	C	285	289	276	71				87	60	41	38	31	35	28	13				
Canary Islands: Palma Island—Los Llanos.....	D	281	207	270	69				84	58	39	35	30	34	24	15				
Ceylon: Colombo.....	C																			
Ceylon: Colombo.....	D	6	3	4								1								
Ceylon: Colombo.....	D	6	3	3								1								
Plague-infected rats.....	D	8																		
Chile:																				
Santiago.....	C				1															
Santiago.....	D				1															
Plague-infected rats.....	C																			
Valparaiso.....	C																			
China:																				
Shensi Province <sup>2</sup> .....	C																			
Shensi Province.....	C																			

<sup>1</sup> 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.

<sup>2</sup> On July 27, 1931, 1,250 cases of plague were reported in Chiobe and Changchow, China, since April. On Sept. 19, 1931, 18 deaths were reported in Changchuanpu and new cases in Kaitung and Fengtien.

<sup>3</sup> On Oct. 17, 1931, plague epidemic was reported in western Shensi Province, China, with 2,000 deaths at Hsinghsien.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

**PLAGUE—Continued**

[C indicates cases; D, deaths; P, present]

[illegible]

India.....	C	664	1,532	2,550	619	625	600	649	936	1,092	1,123	1,034							
Bassett.....	D	440	772	1,147	304	287	292	317	362	439	478	460							1
Bombay.....	D	2	4	1	1					1									
Plague-infected rats.....	D	47	57	42	4														
Madras Presidency.....	C	28	376	185		23	49	19	26	31	16	16	17	9	9	8	18	14	
Moulmein.....	D	24	162	105		16	17	7	14	10			30	76	63				
Rangoon.....	D		9	2										26	30				
Plague-infected rats.....	D		5																
Indo-China (see table below).	D	1	3			5				1				1	1	1	2	2	
Iraq:	D	3	4			1					1	1					1	1	
Baghdad.....	C	1	3			1		1	1	2	1	3	1			1	2	1	1
Masdan.....	D		1							1									
Madagascar (see also table below):	D						2	1	1										
Tamatave.....	D	1	2											1					
Morocco.....	D			18		2					11								
Peru (see table below).	D			8		4													
Sanegal (see table below).	D																		
Siam.....	C	1	4	4	1		4		1	3	1		1				1		
Spain: Hospitalet—Barcelona Province.....	D	5	3	3	1		1			1	1								
Syria: Beirut.....	D	2	2	2	5		1		1										
Tunisia: Tunis.....	D	2	1	1															
Union of South Africa:	C	1	2	3			1												
Cape Province—Plague-infected rats.....	C		1																
Orange Free State.....	C	1	P	P	P					P									

\* Two plague-infected rats were reported in Makawao District, Island of Maui, Hawaii Territory, Feb. 8 and 10, 1932.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	July, 1931	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Place	July, 1931	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931
British East Africa (see also table above): Kenya.....	484	235	14	64	44	28	—	Peru—Continued.						
Ecuador:								Fiten—Chichlayo.....			1			
Alamor Parish—Los Hoyos.....			1	3				Huancabamba—Ayacucho.....			1	7		
Amaluza Parish—Gangochapa.....				2				Huaura—Chancay.....			1	6		
Calvas Canton—			4		1			Plague-infected rats.....			1	1		
Carimanga.....								La Samana—Hualgayoc.....					4	
Overjeria.....	1							Lima—Lima.....					1	
Celleda Canton—Choras.....	1			1				Lima—Lima (haciendas).....					2	
Chimborazo Province—							3	Pajaro—Trujillo.....					1	
Aldusi.....							8	Patate—Hualgayoc.....					1	
Guamote.....								Patrovilca—Chancay.....					10	
Lola Canton—			20					Quispampa—Huancabamba.....				1	1	
Lapaz.....								San Pedro—Pacasmayo.....					1	
Nalmuro.....				2				Supe—Chancay.....					2	
Paterillo.....	1							Senegal:						
Tuburo.....			1	7				Leol <sup>1</sup> .....	27	101	13	6	2	
Palas Canton—San Antonio.....			4	3				Dakar <sup>1</sup> .....	13	53	194	2		
Indo-China.....	1		4	1				Diourbel <sup>1</sup> .....	98	194	46	4		
Madagascar (see also table above):								Lougla <sup>1</sup> .....	73	106	33	4		
Ambositra Province.....	1	2	1	8	39			Rufisque <sup>1</sup> .....	3	2	5		10	
Antidraibe Province.....	1	1	1	5	37			Thies <sup>1</sup> .....	34	2	10	1	19	
Maevatanana Province.....	13	22	19	17	27			Tivaouane <sup>1</sup> .....	10	23	12	1	16	
Miarinarivo Province.....	12	22	19	17	4					7	8	5	7	1
Moramanga Province.....			14	18	10					3				
Tananarive Province.....	8	20	12	16	9					2				
Peru.....	7	19	12	13	25					1				
Barranca—Chancay.....	1	3	12	11	25					4				
Callao—Plague-infected rats.....	5	45	65	120	186					2				
Chaper—Pacasmayo.....	3	44	63	117	178					1				
	2	14	2		4					16	12	1	16	
					1					7	8	5	7	1
					1					3				
					1					2				

<sup>1</sup> Reports incomplete.

## SMALLPOX

Place	Week ended—																
	July 26— Aug. 22, 1931	Aug. 23— Sept. 19, 1931	Sept. 20— Oct. 17, 1931	Oct. 18— Nov. 14, 1931	December, 1931							January, 1932			Feb. 6, 1932		
					November, 1931												
	21	28			5	12	19	26	2	9	16	23	30				
Algeria:																	
Algiers				1													
Constantine							1										
Brazil:																	
Porto Alegre (alastrim)	34	48	46	37		15	19										
	1	4	2	3		1					2						
Batavia																	
Rio de Janeiro	19	50	1,184	18				1									
		5	97	2													
British East Africa: Tanganyika																	
British South Africa:																	
Northern Rhodesia	26	3	1							1							
Southern Rhodesia																	
Canada:																	
Alberta	1	2	12	6		2	9		2			4	8	5			
British Columbia	5	1		2						2	1	5	6	6			
Manitoba																	
Winnipeg																	
Nova Scotia																	
Ontario	5	6	17	15	3	2	5	1	2	2	3	2	1				
Kingston																	
North Bay																	
Ottawa		1	9	12							1						
Toronto																	
Quebec	26	33	11	33	12	5	9	8	2	1	10	21	7	7			
Saskatchewan			2														
Regina																	
Chile:																	
Santiago				3													
				2					2								
Tocopilla																	
China:																	
Amoy	1	1	2	8	2	5	11	28	66	49	37	60	32				
	1	1		6	4	4	20	25	20	19	18	14	54	20			
Canton			1	1	2	3	6	3	3	5	3	11	5				
Foochow	P	P	P	P	6	P	P	P		P	P						
Hankow	3	1	1	18	5	8	11	5	1	34	6	5					
					4	4	2	1	1	7	3	1	4				
Hong Kong													1				

123 cases of smallpox, with 9 deaths, were reported up to Feb. 8, 1932, in Vancouver, British Columbia, Canada.



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

[C indicates cases, D, deaths; P, present]

Place	Week ended—																					
	July 26—Aug 3, Aug 10—17, 1931		Sept 20—Oct 7, Oct 14—21, 1931		Oct 18— Nov 14, 1931		November, 1931					December, 1931					January, 1932					Feb., 5, 1932
	22, 1931	29, 1931	22, 1931	29, 1931	22, 1931	29, 1931	21	28	5	12	19	26	2	9	16	23	30					
China—Continued																						
Manchuria—Dairen																						
Nanking	1							1														
Shanghai																						
Foreigners only																						
Including natives																						
Swatow	1	2	98	21	16	13	20	23	16	40	18	41	43	48	40							
Tientsin			13	2	10	6	8	7	8	13	6	14	11	21	17							
Chosen (see table below).								1														
Colonial.																						
Call. Marta																						
Santa Marta																						
Egypt: Cairo	1																					
Entree	10																					
	2																					
France (see table below).																						
Great Britain:																						
England and Wales																						
London	97	97	161	270	55	50	57	48	44	32	54	68	75	75	75							
London and Great Towns	56	32	58	129	38	27	35	18	13	14	28	40	54	56	56							
	69	88	138	179	48	48	53	42	31	22	43	56	60	45	45							
Honduras:																						
Celba			14																			
Puerto Castilla			1	1					1		1	1										
Tegucigalpa																						
Trujillo																						
India:																						
Bombay	2,927	1,705	1,451	1,152	414	537	501	766														
Calcutta	746	433	224	246	94	118	713	141	2													
Cochin	2	1	1	1	1	1	1	1	1													
Karachi	13	9	5	1	1	1	1	1	1													
Madras	3	1	1	1	1	1	1	1	1													
	1	1	13	5	2	2	3	1	2	1	3	1	2	3	1	1	1	1				
			2		1	1	1	1	1													



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

!C indicates cases; D, deaths; P, present/

[illegible]



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—															
	July 26- Aug. 22, 1931		Aug. 23- Sept. 19, 1931		Sept. 20-Oct. 17, 1931		November, 1931				December, 1931				January, 1932	
	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	
Mexico:																
Guadalajara.....	1															
Mexico City, including municipalities in Federal District.....	18	10	14	7	3	3	5	7	4	3	3	1	5	10		
San Luis Potosi.....	10	4	8	2	1	1	1	1	2	1	1	2	1	4		
Torreón.....	1		2		3											
Morocco.....			2		5											
Palentine.....	8		4		1		11	6	4	1	1	3	2	1		
Paraguay: Asunción.....	11	4	6	2	1	1	1	2	2	1		1	1	1		
Poland.....		1														
Portugal: Oporto.....	31	11	14	2	6	16	36	22	68	30	46	49	69	61		
Rumania.....	2		1	1	2	2	2	6	6	5	3	1	4			
Tunisia: Tunis.....	23	13	18	12	6	8	13	29	25	41	42					
Turkey (see table below).	2	1	3	3	2	1	2	2	4	6	1					
Union of South Africa:							26			1						
Cape Province.....	P	P	P	P	P	P	P	P	P	P	P	P	P			
Municipality of East London.....	P	P	P	P	P	P	P	P	P	P	P	P	P			
Natal.....	P	P	P	P	P	P	P	P	P	P	P	P	P			
Orange Free State.....	P	P	P	P	P	P	P	P	P	P	P	P	P			
Transvaal.....	P	P	P	P	P	P	P	P	P	P	P	P	P			
Venezuela: Caracas (see table below).																
Yugoslavia (see table below).																
On vessel: At Antofagasta, from Iquique and points north.....	C									1						



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## YELLOW FEVER

[C indicates cases; D, deaths; P, present]

[illegible]

Tamale.....	C		2															2	1	
Wale Wale.....	D		2		1	1														
Ivory Coast:	D																			
Bobo Dionlasso.....	C		1																	
Grand Bassam.....	D		1		4	1														
Kong Circle.....	D		1		2	1														
Seguela.....	C		4																	
Tehini.....	C				P															
Nigeria.....	C		1		1	1														
Senegal:	D																			
Podor (Hinterland).....	C				1	1														
St. Louis.....	C				1	1														
Thies.....	C																			
Sudan (French):.....	D		4																	
Macina—Kayo Circle.....	C																			
Togo (French): Atakpame—Ame Circle.....	D																			
Upper Volta:	D																			
Banfora.....	C		2																	
Dedougou.....	D		1																	
Diabakoko.....	C																			
Ouagadougou.....	D																			





**UNITED STATES TREASURY DEPARTMENT**

# **PUBLIC HEALTH REPORTS**

ISSUED WEEKLY

**BY THE UNITED STATES  
PUBLIC HEALTH SERVICE**

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**VOLUME 47    ::    ::    NUMBER 10**

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**MARCH 4 - - - - 1932**

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**SPECIAL ARTICLES**

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**The Chemistry of Cell Division—Effect of Copper Salts on  
Division of Amoeba, and Antagonism of Copper and  
Glutathione**

**Summary of Notifiable Diseases in the United States, 1930**



**UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932**

## UNITED STATES PUBLIC HEALTH SERVICE

**HUGH S. CUMMING, *Surgeon General***

### DIVISION OF SANITARY REPORTS AND STATISTICS

**Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division***

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## THE CHEMISTRY OF CELL DIVISION

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### III. INHIBITION OF CELL DIVISION OF AMOEBA PROTEUS BY HIGH DILUTIONS OF COPPER SALTS—ANTAGONISM OF COPPER AND GLUTATHIONE

By H. W. CHALKLEY, *Physiologist*, and CARL VOEGTLIN, *Chief, Division of Pharmacology, National Institute of Health, United States Public Health Service*

#### INTRODUCTION

In the first paper of this series (Voegtlin and Chalkley, 1930) it was pointed out that the complicated process of cell division in all probability is regulated by chemicals occurring normally in cells in *relatively low* concentrations. Evidence was presented which clearly showed that one of these chemicals, glutathione, favors the division of *Amoeba proteus* under survival conditions. The stimulating action of low concentrations of glutathione was particularly pronounced on the division of the nucleus. We also suggested that the traces of heavy metal compounds, which physiologically are widely distributed in animal cells, may play a rôle in cell division. In recent years numerous facts have been discovered indicating that iron and copper particularly are concerned in a variety of biochemical and physiological processes. A systematic study of the action of copper salts on cell division, therefore, appeared to be of considerable interest, particularly so as the work of Voegtlin, Johnson, and Dyer (1925) indicates strongly that the toxic action of low concentrations of copper on various living organisms is explicable in terms of its chemical affinity for the sulphydryl groups in living cells. Recent work from this laboratory (Voegtlin, Johnson, and Rosenthal, 1931) furthermore shows that copper *in vitro* is a powerful catalyst in the oxidation of reduced to oxidized glutathione, whereas under the same conditions iron salts are inactive. We therefore decided to investigate the action of copper salts on the division of *Amoeba proteus* and also to determine whether or not there is any evidence of a biological antagonism of copper and glutathione with respect to cell division and toxic action.

## MATERIAL AND METHODS

The *Amoeba* used were from a single clone derived from a strain of *Amoeba proteus* (Schaeffer, 1916) originally secured from the Johns Hopkins University by courtesy of Prof. S. O. Mast. They were cultured by the method previously employed by Voegtlin and Chalkley (1930). All solutions were made with doubly glass-distilled water, and all glassware was thoroughly cleaned in order to remove traces of heavy metals. The cupric chloride was prepared by recrystallization from C.P. materials. We are indebted to Dr. J. M. Johnson for the glutathione used in this investigation. This reduced glutathione (GSH) was prepared by the cadmium method of purification described by Voegtlin, Johnson, and Rosenthal (1931). It analyzed as follows: N 13.67 and 13.70; S 10.76 and 10.76. The material did not react with the latest modification (1930) of the Sullivan reaction for cysteine, and from all information it must be considered as being a very pure material, free from all but infinitesimal traces of copper.

All solutions were buffered by the addition of small amounts (2 to 5 cubic centimeters M/20 buffer to the liter of solution) with Clark and Lubs phosphate buffer and the pH was checked colorimetrically before and after each experiment. All cells were isolated so that the occurrence or nonoccurrence of divisions could be accurately ascertained. The general procedure was as follows:

Each *Amoeba* was removed from the culture with a capillary pipette, washed thoroughly in standard saline,<sup>1</sup> and placed on a depression slide in a drop of the same saline. Then, by repeatedly drawing it up and ejecting it from a capillary pipette, the cell was stimulated until it assumed a spherical shape. Its diameter was then measured by means of a compound microscope with eyepiece micrometer, using 20X ocular and 16-millimeter apochromat objective and the volume was calculated. The cell was then transferred in saline to a cover glass in a hanging drop, which was set aside inverted. When the *Amoeba* had attached to the cover glass and was sufficiently spread out, the cell was placed on the stage of the microscope and examined to insure that it was mononucleate. If necessary for the experiment the nucleus was measured with the micrometer (using a 20X ocular and 4-millimeter apochromat), its three dimensions were ascertained, and the volume was calculated on the assumption that it was in general ellipsoidal in shape. Then the *Amoeba* was transferred to a clean 25 cubic centimeter pyrex beaker containing 2 cubic centimeters of the solution to be used in the contemplated experiment. Each *Amoeba* and any cell originating from it was similarly

<sup>1</sup> The solution referred to as "standard saline" is that used in culture and is made up as follows: 0.1 gram NaCl, 0.04 gram KCl, 0.06 gram CaCl<sub>2</sub>, distilled H<sub>2</sub>O to make 1,000 cubic centimeters of solution.

examined every 24 hours thereafter until the experiment was completed, and at each examination both beaker and solution were renewed. The *Amoebae*, both cultures and experimental organisms, were kept in a constant temperature room at 21° C., except during the time of handling and examination.

This procedure was followed throughout except in certain experiments described later, where the exceptions are noted.

#### THE ACTION OF COPPER ON AMOEBA AS CONTRASTED WITH THAT OF SH GLUTATHIONE

##### (A) COPPER SALTS IN HIGH CONCENTRATIONS

To ascertain the effect of relatively high concentrations of copper salts, two experiments were performed. Three *Amoebae* were used in each experiment, one small (0.0005 to 0.001 cubic millimeter), one medium (0.001 to 0.003 cubic millimeter), and one large (0.004 to 0.008 cubic millimeter) in volume. The procedure as previously outlined was departed from in that after washing and measuring the cells they were transferred to a drop of the experimental copper salt solution placed on a cover glass, instead of to beakers, and a hanging drop preparation was made. This was done so that close and repeated observations and measurements of the cells could be made during the experimental period.

In the first experiment the three *Amoebae* were immersed in m/1000  $\text{CuCl}_2$  made up in standard saline buffered to pH 7.0. Then they were placed under the microscope and the volume of each was ascertained at frequent intervals. The changes in volume found were expressed as per cents of the original cell volume and plotted against the time from the moment of immersion. The resulting curves are presented in Figure 1. It will be seen that immediately after immersion the volumes of all the *Amoebae* increased very rapidly to a maximum, which was reached in approximately 10 minutes. This increase was followed by a slight decrease in the volumes over a period of from 15 to 45 minutes and then succeeded by a relatively slow increase in the volumes that continued in each case until cytolysis of the cell occurred by rupture of the membrane.

In the second experiment, NaCu citrate was used instead of  $\text{CuCl}_2$ . From the curves derived from the measurements on these *Amoebae* (fig. 1) it would seem that the only significant difference between the two groups is the lessening of the initial degree of swelling and the lengthening of the time to complete cytolysis in the group in the NaCu citrate solution. One cell in this group underwent partial cytolysis by rupture about 30 minutes after immersion. The rupture healed, however, and swelling recommenced, only to be again followed by a slight rupture. From this apparently there was only partial recovery, since it was followed by a slow decrease in volume which continued



until the sudden and complete breakdown of the cell membrane 180 minutes after immersion.

From the similarity in the results of these two experiments it appears that the action of both salts must be ascribed to the common factor, copper. The primary effect of exposure is an increase in the

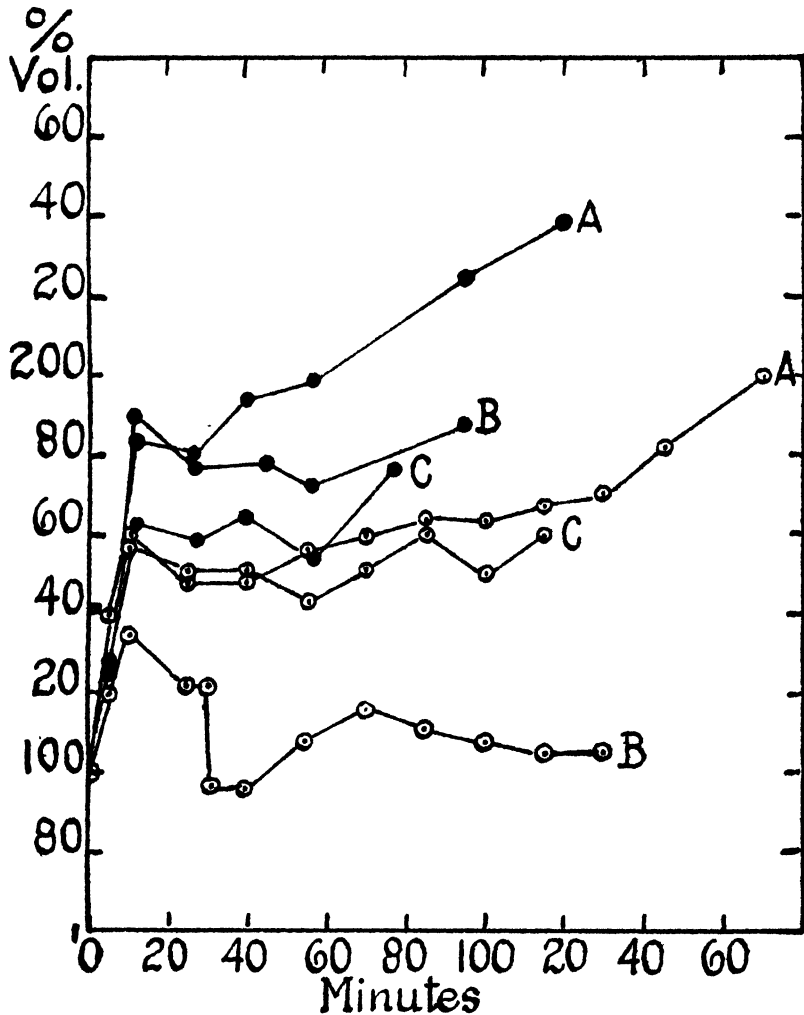


FIGURE 1.—Graph showing the per cent changes in volume of six *Amoebae*, three immersed in a m/1,000 solution of  $\text{CuCl}_2$  and three in a m/1,000 solution  $\text{CuNa citrate}$ . Solid symbols, curves for *Amoebae* in  $\text{CuCl}_2$ ; open symbols, curves for *Amoebae* in  $\text{CuNa citrate}$ . (A) *Amoebae* approximately 0.001 cubic millimeter in volume; (B) *Amoebae* approximately 0.004 cubic millimeter in volume; (C) *Amoebae* approximately 0.008 cubic millimeter in volume

volume of the cell, probably (since the effect is rapid) produced through osmotic intake of water by reason of changes induced in the cell membrane. This idea is supported by the fact that this initial swelling is followed by a slight shrinkage, which would seem to be

indicative of a reaction tending to partially offset this primary effect. This, it seems, could hardly occur if the entire cell content were affected. Furthermore, the fact that partial breaks in the membrane are followed by immediate and rapid loss of volume, complete repair by resumption of swelling and partial repair by slow shrinkage, certainly indicates that the membrane condition is responsible for the swelling.

We may conclude, therefore, that the death of *Amoeba* in this relatively high concentration of copper salts is essentially due to rupture of the membrane under osmotically induced pressure, which becomes effective owing to the effect of copper upon the permeability of the cell membrane. We next investigated the effect of more dilute solutions of copper salts.

#### (B) THE EFFECT OF COPPER IN HIGH DILUTION

In these experiments the procedure outlined in the section on Materials and Methods was employed. The *Amoebae* used as controls were immersed in standard saline and an equal number were exposed to the copper solution, all solutions buffered to pH 7.0. In each experiment both the cell and nuclear volume of each *Amoeba* were measured at the beginning of the test and at 24-hour intervals thereafter. All experiments were run for three days, except as noted later. After the experiment had been completed, the *Amoebae* were grouped in respect to cell volume with a class interval of 0.0005 cubic millimeters. The percentage change in volume in terms of the original volume was calculated for each *Amoeba* for both cell and nucleus for each time interval. The percentages thus obtained were averaged for each time interval, yielding the average percentage change in volume for cell and nucleus, respectively, for each 24 hours of the period of experimentation. In addition, the percentage of nuclear division and mortality relative to the original number of *Amoebae* was calculated for each 24 hours, and in certain tests (as noted below) the number of food vacuoles was found per 100,000 cubic micra of living cell substance at the beginning and at the end of each 24-hour period. All of these values were then plotted as a function of the time in days.

In the first test 10 cells were exposed to a m/500,000  $\text{CuCl}_2$  solution and 10 were used as controls. The control cells averaged 0.0014 and the experimental 0.00125 cubic millimeter in volume, with the volumes falling in the class interval from 0.001 to 0.0015. Due to the high mortality in the copper-treated organisms the experiment was terminated at the end of 48 hours. The results are presented in Figure 2. Looking first at the curves for the copper-treated cells, it is at once obvious from the figure that the solution is strongly toxic. All the copper treated *Amoebae* were dead at the end of 48 hours and, as was to be expected, no increase of cell volume, such as might indi-

cate growth, was found in the living cells at the end of the first 24 hours. No data were obtainable for the living nuclei, inasmuch as in all surviving *Amoebae* the cells had assumed a spherical shape and the nuclei were so obscured by superimposed granules that no measurements were possible. All the cells which died in  $\text{CuCl}_2$  solution were found. They were all dark and coagulated. In 8 out of the 10 the cell membrane was only in part persistent; in the other 2 it was apparently intact. In the cells exhibiting only partial persistence of the membrane there appeared to have occurred a rupture as in all cases a protruding irregular mass of coagulated protoplasm was

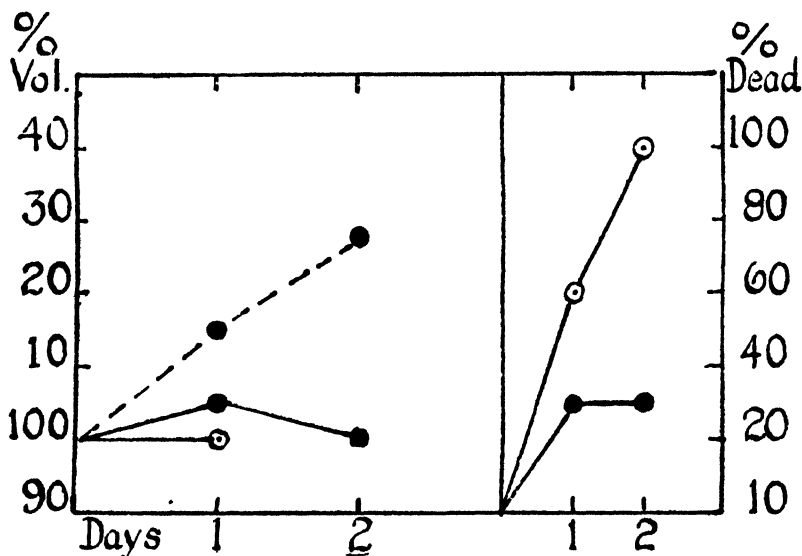


FIGURE 2.—Graph showing per cent changes in volume of nucleus and cell and per cent mortality for *Amoebae* with original cell volumes from 0.001 to 0.0015 cubic millimeter immersed in m/500,000  $\text{CuCl}_2$  solution as compared with *Amoebae* immersed in standard saline. Solid symbols, *Amoebae* in saline; open symbols, *Amoebae* in  $\text{CuCl}_2$  solution. Dotted line, per cent nuclear volume; solid line, per cent cell volume. (Note: No data obtainable on nuclear volume in  $\text{CuCl}_2$ , see text)

seen that had every appearance of having been extended from a rupture in the membrane. The nuclei, where visible, were dark and brownish in color and seemed shrunken. It seems probable that in most cases the cells had burst, as in the experiment in m/1000  $\text{CuCl}_2$ , and then coagulation of the cell followed. Turning to the controls it will be seen that they show a low death rate and an increase in the average volume for both nucleus and cytoplasm. It is striking that the increase in nuclear volume persists for 48 hours, while at 24 hours, the cell volume reaches a maximum and has, within experimental error, resumed its original value at the end of the second day. The cells that died were not found, as they normally disintegrate shortly after death in this solution.

As it was evident that such a high concentration of  $\text{CuCl}_2$  had been employed as to prevent measurement of changes in nuclear volume by reason of pathological change, we made our next test with a  $\text{CuCl}_2$  concentration of  $m/50,000,000$ . In this test 40 *Amoebae* were used, 20 in the  $\text{CuCl}_2$  solution and 20 in the control saline. The average volumes for the groups were 0.0011 for controls and 0.0011 for the organisms treated with  $\text{CuCl}_2$ , respectively; all volumes fell in the class interval 0.0010 to 0.0015 cubic millimeter. The curves obtained are presented in Figure 3. It will be noted that the surviving copper-treated *Amoebae* show, on an average, an increase in cell volume in the first 24 hours, followed by a decrease during the subsequent two days.

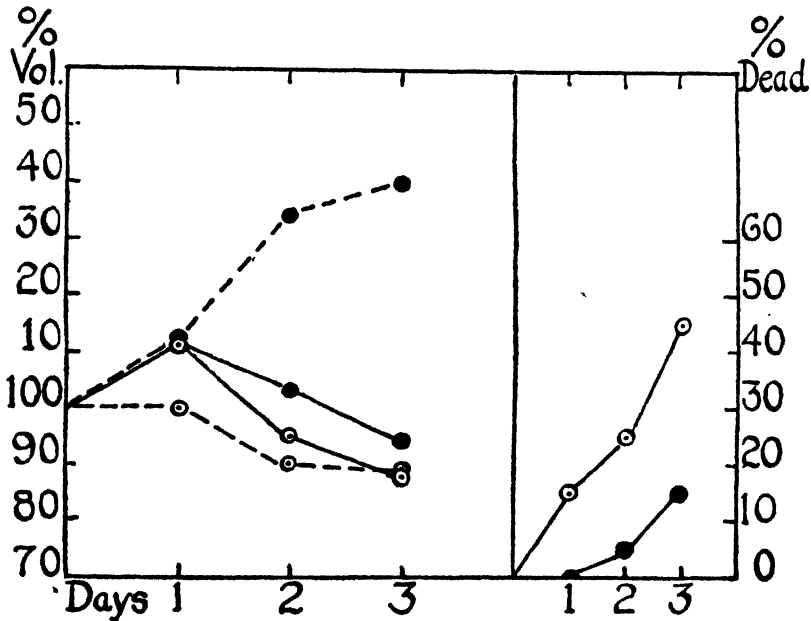


FIGURE 3.—Graph showing per cent changes in average volume of cell and nucleus in *Amoebae* with original cell volume between 0.001 and 0.0015 cubic millimeter immersed in  $m/50,000,000$   $\text{CuCl}_2$  solution and in standard saline (Graph A) and the per cent mortality in the same (Graph B). Dotted lines (in A), nuclear volume; solid lines (in A), cell volume. Solid symbols, *Amoebae* in standard saline; open symbols, *Amoebae* in  $\text{CuCl}_2$  solution

The average nuclear volume, however, remains practically stationary for 24 hours and then decreases. There is again a very high death rate, 45 per cent by the end of the 3-day period, indicating that the solution is still quite toxic. The dead cells were gelated similarly to those in the previous experiment. The curves for the controls, it will be seen, are similar to those obtained in the preceding experiment.

The course of the curves for the average nuclear volume in this experiment suggested that copper in still higher dilution might exhibit as its principal effect an inhibitory action on nuclear growth (increase

in volume), and possibly on cell growth also. Such effect might, if Chalkley's observations (Chalkley, 1931) as to the close correlation of cell growth and the nucleo-cytoplasmic ratio with the occurrence of division under cultural conditions be considered, result in inhibition of either nuclear or cell division, or both, below that to be found in the controls. In addition, we knew from the results obtained by Voegtlin and Chalkley (1930) that glutathione would increase the percentage of division in cells subjected to its influence above that found in the controls. It seemed from these two considerations that it was entirely possible that the effects of copper and glutathione on *Amoeba* might be antagonistic, possibly not only in respect to division but also in respect to the changes in volume we were investigating. To ascertain if this were true, however, we must have closely comparable data for both glutathione and copper. Therefore, in the next experiment, in addition to subjecting *Amoebae* to  $\text{CuCl}_2$  (m/500,000,000 to further reduce the mortality), we also subjected other *Amoebae* to the action of m/100,000 GSH.

Six experiments were made with  $\text{CuCl}_2$  and five with SH glutathione, employing 220 *Amoebae*. For the convenience of the reader, however, the results have been combined, as they were consistent throughout when the *Amoebae* were separated into the several class intervals for volume. They were found to be distributed in these intervals, as follows: Cells from 0.0010 to 0.0015 cubic millimeter in volume, 30 in  $\text{CuCl}_2$ , 16 in GSH, 42 in the control; cells from 0.0015 to 0.0020, 14.5 in  $\text{CuCl}_2$ , 20 in GSH, and 30 in the control; cells from 0.0020 to 0.0025, 15.5 in  $\text{CuCl}_2$ , 14 in GSH, and 38 in the control.

In addition to the curves obtained as heretofore for cell volume, nuclear volume, mortality, and division, curves were plotted for the disappearance of food vacuoles in all groups. These last were obtained as follows: The number of food vacuoles in each cell was recorded at each examination, summed up for each group of cells, and divided by the total volume of living protoplasm, in units of 0.0001 cubic millimeter, giving the average number of food vacuoles per 0.0001 cubic millimeter of protoplasm found at each examination for each group. These values were plotted as usual as a function of the time in days. Since there was no food intake during the experiment the values so plotted represent roughly the average rate at which the food originally in the *Amoebae* disappeared during the experimental period in each group. The error involved can not at this time be estimated, owing mainly to the fact that no distinction could be made between digested and ejected food. The results, therefore, must be considered as tentative, and any conclusion as to digestive process is based on the assumption that the disappearance is due to digestion at least in the main, and not to ejection of the vacuolar contents, without chemical change.

It appeared of interest to determine whether the copper-treated cells surviving the experimental period had been greatly injured. At the completion of one of the tests with copper, therefore, the surviving cells both from the control and copper solution were individually transferred to separate beakers containing a lavish supply of food organisms and the observations and measurements were continued. The results of all these experiments are presented in Figures 4 to 9. These show, respectively, (1) the curves obtained for the average per cent change in volume in cell and nucleus for *Amoebae* immersed in m/100,000 GSH, in m/500,000,000  $\text{CuCl}_2$ , and in standard saline for each of the three class intervals for average original cell volume, namely, 0.001 to 0.0015, 0.0015 to 0.002, and 0.002 to 0.0025 cubic millimeter; (2) the same curves grouped to bring together all curves obtained in m/100,000 GSH, m/500,000,000  $\text{CuCl}_2$ , and in standard saline, respectively; (3) the curves for average percentage of division in each of the class intervals in m/100,000 GSH, m/500,000,000  $\text{CuCl}_2$ , and in standard saline, respectively; (4) the curves for average percentage mortality similarly grouped; (5) the curves for the disappearance of food vacuoles similarly grouped; and (6) the curves obtained for the test in which feeding was resumed after the usual 3-day interval of starvation.

From Figure 4 it will be seen that, in general, growth of nucleus is most rapid (or in the case of the  $\text{CuCl}_2$  treated cells is least inhibited) in the small, less in the medium, and least in the large cells. Average nuclear growth is most rapid in all cell sizes in the GSH solution, less rapid in the saline, and least in the  $\text{CuCl}_2$  solution. In the latter, in fact, there is practically no growth in the cells averaging 0.0015 to 0.002 and shrinkage in the cells averaging 0.002 to 0.0025 cubic millimeter in volume. Although not so marked as the variations in nuclear growth, the cell growth also shows variation with the original cell volume. Except in the small cells where, in the saline controls, the cell grows during the first 24 hours, the cell volume decreases with the time of starvation in all solutions. Apparently this decrease tends to increase as the average original cell volume is increased. Cells immersed in saline suffer this decrease least throughout the range of cell volumes used. No significant difference appears, however, in this respect as between cells in GSH and  $\text{CuCl}_2$ .

In view of the finding of Chalkley (1931) that, under cultural conditions, the average rate of growth declines with the age (volume) of the cell, it appears that these differences with original cell size should be ascribed to internal factors correlated with the age of the cell. This influence of age—i. e., cell volume—is still more forcibly brought out in Figure 5. Here, if comparison of the curves is made as to the three class intervals for original cell volume in each of the three groups (GSH,  $\text{CuCl}_2$ , and controls) at the maximal growth point for each

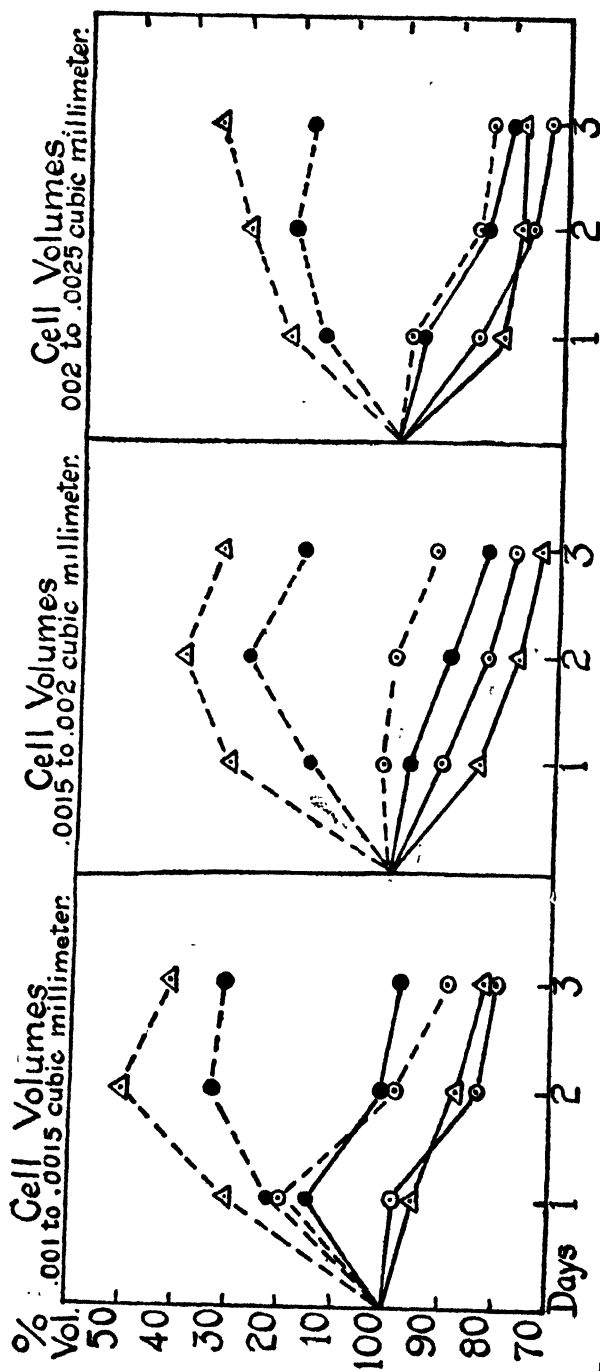


FIGURE 4.—Graph showing the per cent changes in cell and nuclear volumes of *Amoeba* of average cell volumes as indicated, when immersed in m/100,000 GSH, m/500,000  $\text{CuCl}_2$  and standard saline solution. Dotted lines, nuclear volume; solid lines, cell volume; solid symbols, changes in saline; open circular symbols, changes in  $\text{CuCl}_2$ ; open triangles, changes in GSH

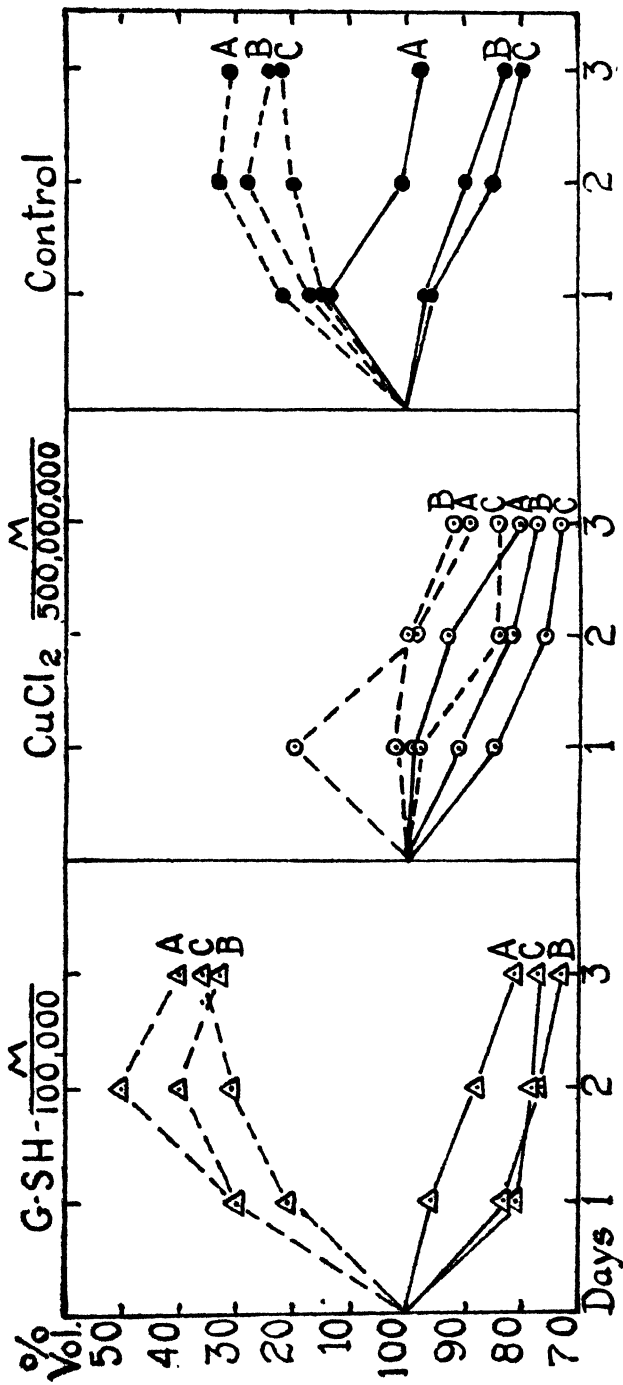


FIGURE 5.—Graph showing per cent changes in cell and nuclear volumes of *Amoeba* immersed in m/100,000 GSH, m/500,000,000 CuCl<sub>2</sub> and standard saline. Curves designated A, B, and C were obtained with *Amoeba* of average cell volumes of 0.001 to 0.0015, 0.0015 to 0.002, and 0.002 to 0.0025 cubic millimeter, respectively.



group—i. e., on the first day for  $\text{CuCl}_2$  and on the second day for the group in GSH and the controls—it will be seen that in all intervals the curves fall in order of original cell size, the highest per cent increase in nuclear volume being attained by the small cells and the lowest by the large cells, and that the highest percentage increase or least percentage decrease in cell volume is also similarly correlated.

Turning now to Figure 6 we see first, as found before by Voegtlin and Chalkley, the marked effect of GSH in raising the percentage of division and also the dependence of division on original cell size. As before, we note the apparent marked effect of GSH on nuclear division in cells of medium size—0.0015 to 0.002 cubic millimeter. In this particular series, however, it must be noted that this effect attains what is probably an abnormal emphasis, due to the fact that, in one experiment, cells from an exceptionally vigorous culture were used and no less than 90 per cent divided in GSH solution in the first 24 hours. This exceptional result influences mainly the curve for the medium-sized cells, and the irregularity so produced introduces some error due to the relatively small number of cells (as compared with the numbers used in Voegtlin and Chalkley's previous experiments). It is believed, however, that this apparent effect is real. Its explanation will be dealt with later.

$\text{CuCl}_2$ , it is at once seen, markedly decreases the percentage of division. From the fact that only cells of large size divided, it is surmised that (as with GSH) the original cell size is the main controlling factor. In the controls, which, it will be noted, were twice as numerous as either experimental group, the dependence of division on cell size is also clearly brought out.

Figure 7 shows the percentage mortality in the three groups for each class interval of original cell volume. There is no significant difference between the control,  $\text{CuCl}_2$  and GSH groups, except that it will be seen that the large cells in  $\text{CuCl}_2$  show a markedly higher mortality as compared to any others. It is interesting to recall that the largest cells exposed to high concentrations of  $\text{CuCl}_2$  or  $\text{CuNa}$  citrate (see fig. 1) were the first killed.

From Figure 8 it will be seen that the rate of the disappearance of food vacuoles is apparently influenced by both  $\text{CuCl}_2$  and GSH, the first apparently exerting a retarding and the second an accelerating influence. While recognizing the fact that such disappearance might be due to mere ejection of undigested food, we do not believe this to be the method of disposal, but rather incline to view these curves as indicative of the effects of the reagents upon the digestive processes of the cell. This interpretation is consistent when its apparent relation to average cell size is compared with the same relation for cell growth. Thus it is apparent in the curves obtained from *Amoebae* in  $\text{CuCl}_2$  that digestion—i. e., disappearance of food vacuoles—is quickest in the

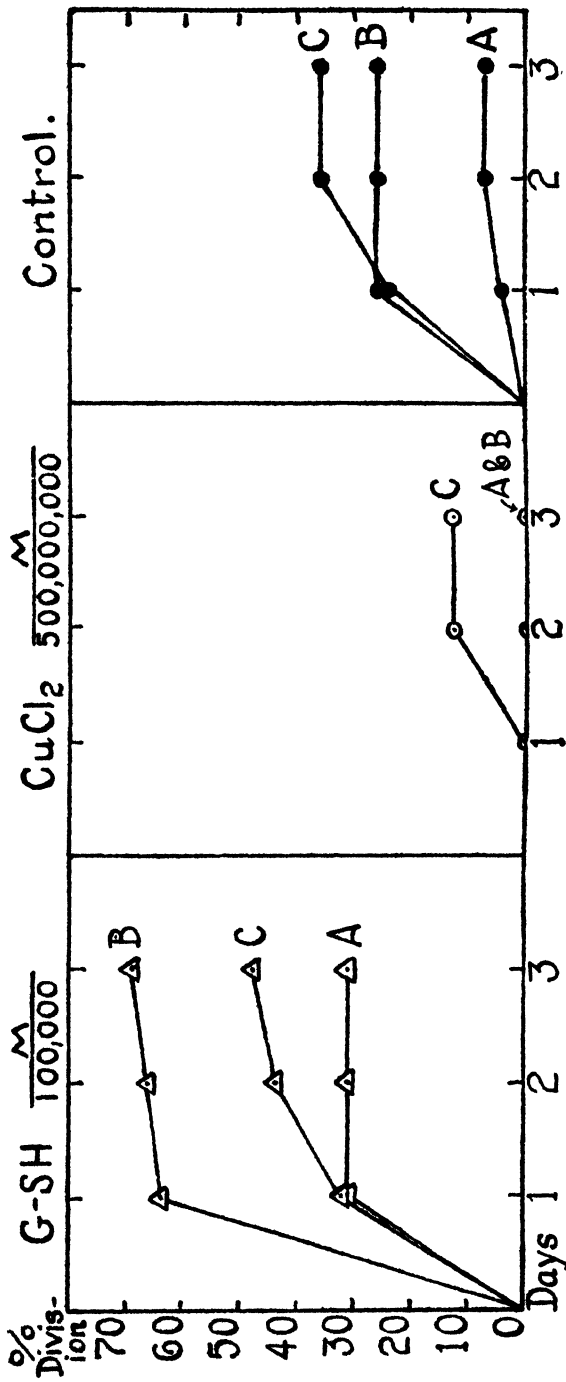


FIGURE 6.—Graph showing curves for per cent nuclear division in *Amoeba* immersed in m/100,000 GSH, m/500,000,000 CuCl<sub>2</sub> and standard saline, respectively. Curves designated A, B, and C were obtained with *Amoeba* of average cell volume of 0.0015 to 0.0015, 0.0015 to 0.002, and 0.002 to 0.0025, respectively.

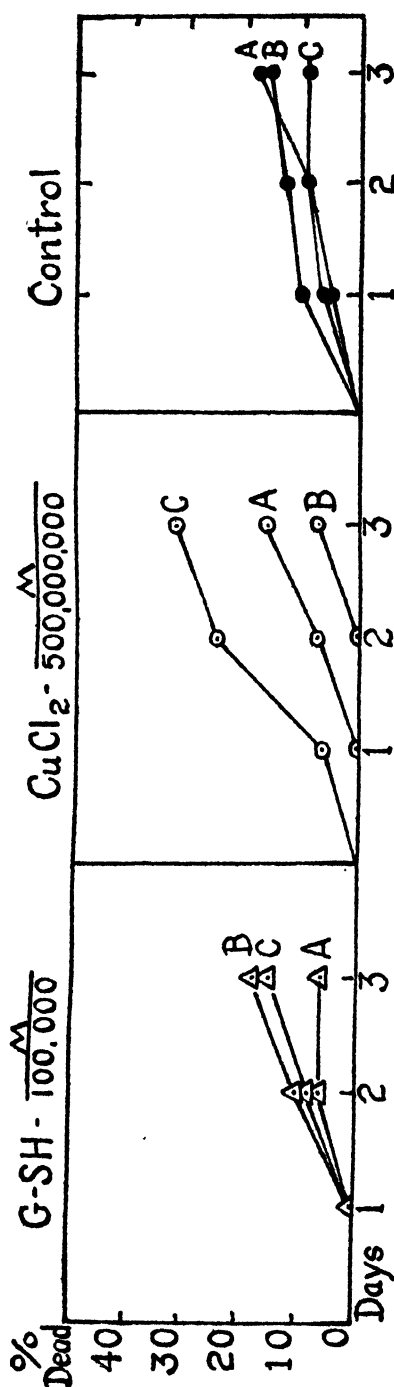


FIGURE 7.—Graph showing curves for per cent mortality in *Amoebae* immersed in m/100,000 GSH, m/500,000,000 CuCl<sub>2</sub>, and standard saline solutions. Curves designated A, B, and C were obtained with *Amoebae* of average cell volumes of 0.001 to 0.0015, 0.0015 to 0.002, and 0.002 to 0.0025 cubic millimeter, respectively

small cells and slowest in the largest. Likewise, as has already been pointed out, resistance to the depressing effect of copper is greatest in the smallest and least in the largest cells—a perfectly consistent result if the resistance is considered to be dependent on the energy released by normal metabolic changes resulting from assimilation of food.

Summing up these results we find in the controls that, as a result of withdrawal of external food supply (survival conditions), cell growth is inhibited first, then nuclear growth. This effect is dependent on original cell size, the cells of least volume (youngest) being the least affected. Treatment of *Amoebae* with GSH enhances the growth of the nucleus apparently at the expense of the extra nuclear content of the cell. Treatment with CuCl<sub>2</sub> depresses all growth and apparently most markedly that of the nucleus. It also increases the rate of mortality of large cells, inhibits division, and probably decreases the rate at which food contained in food vacuoles is assimilated. Treatment with GSH has a contrary effect on growth and food assimilation. As to division, GSH increases the percentage of division in a given group of cells, exerting its major effect on those of *medium* size. All these effects are also functions of original cell size.

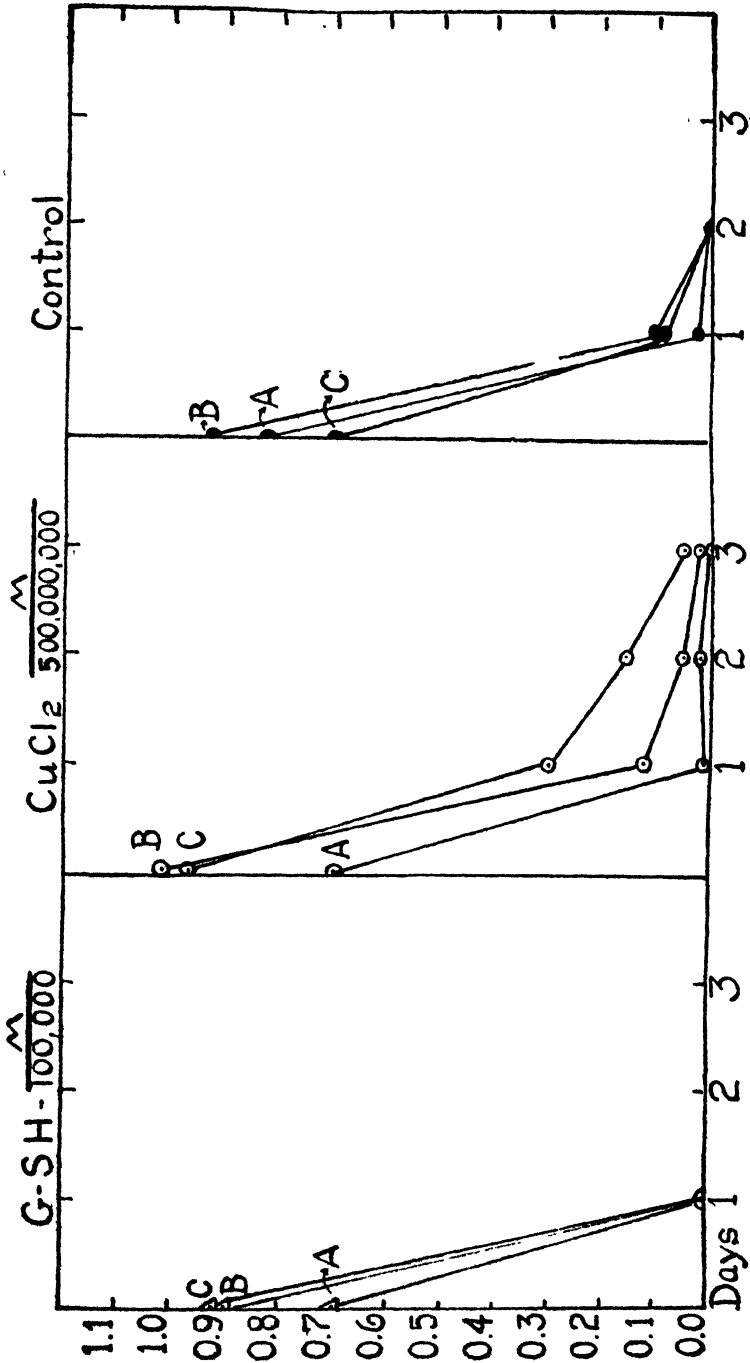


FIGURE 8.—Graph showing curves for number of food vacuoles per 0.001 cubic millimeter of living protoplasm in *Amoeba* immersed in m/100,000 GSH, m/500,000,000 CuCl<sub>2</sub>, and standard saline solutions. Curves designated A, B, and C were obtained with *Amoeba* having average cell volumes from 0.001 to 0.0015, 0.0015 to 0.002, and 0.002 to 0.0025, respectively.

We shall now consider the results of resumption of feeding after a period of starvation upon cells in saline and also upon cells treated with  $\text{CuCl}_2$ , as shown in Figure 9. It will be seen at once that the effect produced by the  $\text{CuCl}_2$  is, to some extent at least, reversible. Cell volume, nuclear volume, and percentage of division all rise after feeding is resumed. However, it is to be noted that the rise in these activities is not as great as that which manifests itself in the controls upon resumption of feeding. Certain other differences are also manifest as between the  $\text{CuCl}_2$ -treated and the control organisms. The most marked immediate influence upon the controls is that exerted on the cell volume, while in the  $\text{CuCl}_2$  cells the nucleus responds most rapidly, there being a distinct lag in the resumption of cell growth covering one day. Furthermore, it will be seen that in both groups division percentages are closely related to nuclear growth, but with a slight difference. In the controls and also in the  $\text{CuCl}_2$  cells division occurs only on those days in which the mean nuclear volume increased, but in the  $\text{CuCl}_2$  cells also only on those days after it exceeded its original volume—i. e., in the  $\text{CuCl}_2$  group on the third day the mean nuclear volume increased—but there were no divisions until after it reached its original volume on the fourth. It is noticeable that there is for both the control and Cu-treated cells a distinct tendency toward the reestablishment of the original nucleo-cytoplasmic ratio as the result of this reestablishment of the old environmental conditions.

#### ANTAGONISM BETWEEN COPPER AND SH GLUTATHIONE

The preceding experiments clearly show the contrary action of GSH and  $\text{CuCl}_2$  on *Amoeba*. It therefore seemed of interest to ascertain whether the action of  $\text{CuCl}_2$  could be reversed by GSH.

In planning experiments to this end, certain modifications of the previous procedure were introduced. It was impracticable to use very low concentrations of  $\text{CuCl}_2$  for long periods, as had hitherto been done. The effects of starvation during these extended periods would not be overcome by treatment with GSH<sup>2</sup> and would eclipse any action of GSH. After several preliminary tests, the following procedure was adopted:

*Amoebae* were exposed to relatively high concentrations of  $\text{CuCl}_2$  for a short period until observation revealed a marked action of the salt, as indicated by rounding up of the cells and cessation of locomotion. Then a number of the cells thus treated were washed in standard saline, measured, and isolated into beakers. One-half of the number were placed in standard saline and one-half in a GSH solution equal in concentration to the  $\text{CuCl}_2$  solution used. Two experiments were performed, one to test the effect of subsequent treatment with GSH on the toxic action of  $\text{CuCl}_2$  and one to test its effect on division.

<sup>2</sup> The experiments of Voegtlin and Chalkley indicate that GSH is of negligible value as food.

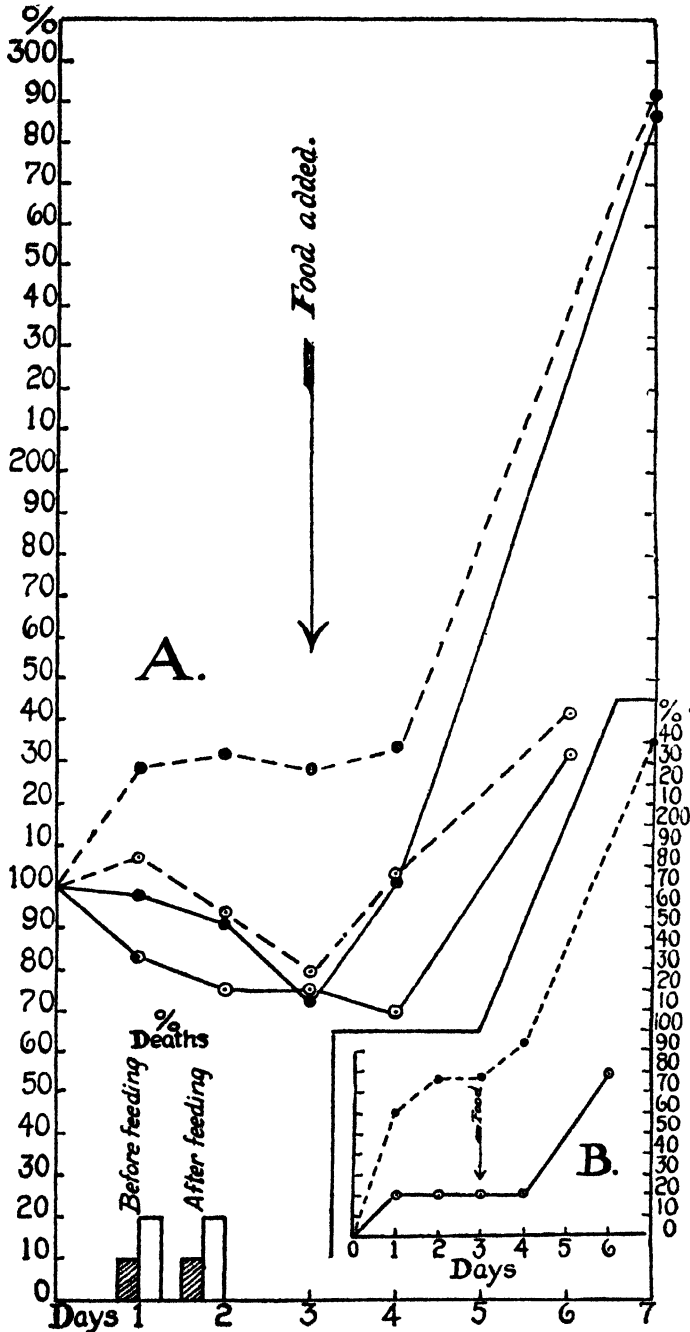


FIGURE 9.—Graph showing changes in per cent of cell and nuclear volumes, per cent of division and per cent mortality in *Amoebae* immersed under survival conditions for a period of three days in m/100,000,000 CuCl<sub>2</sub> solution and standard saline, respectively, and then all transferred to standard saline with food. A, volume changes; dotted line, nucleus; solid line, cell; solid symbols, CuCl<sub>2</sub>; open symbols, saline; shaded column, saline; open column, CuCl<sub>2</sub>. B, division; dotted line, saline; solid line CuCl<sub>2</sub>.

In the experiment on the effect of GSH on the toxic action of  $\text{CuCl}_2$  three tests were made. In each test 40 *Amoebae* were used; These were all exposed to  $\text{CuCl}_2$  solution m/25,000 for two hours. then, after washing, 20 were put into m/25,000 GSH and 20 into saline and all were left for 24 hours in these solutions. The results obtained are presented in Table 1.

TABLE 1.—*The reversal of the toxic action of copper by SH glutathione*

(All *Amoebae* treated with m/25,000  $\text{CuCl}_2$  for 2 hours, then transferred one-half to standard saline, one-half to GSH m/25,000 and left for 24 hours)

TEST 1

	Number of Amoebae	Dead	Living	Divided
Saline.....	20	15	5	0
GSH.....	20	0	20	1

TEST 2

Saline.....	20	18	2	0
GSH.....	20	1	19	1

TEST 3

Saline.....	20	17	3	0
GSH.....	20	5	15	0

It is obvious that subsequent treatment of copper-poisoned *Amoebae* with GSH will prevent death and, if division is taken as an indication of normality, tend to the restoration of normal conditions.

In the experiment in regard to division, 40 *Amoebae* were used and two tests were made, 20 *Amoebae* being used in each. The procedure was as before, but the concentration of  $\text{CuCl}_2$  and GSH was reduced to m/50,000 and measurements of the volumes of cell and nucleus were made as usual. In each test a control of 10 untreated *Amoebae* were put in standard saline alone and measured so as to provide a normal set of measurements of volume, per cent division, etc., for comparison. The results are presented in Figure 10.

From the figure it will be seen that the cells treated with  $\text{CuCl}_2$  and transferred to saline exhibit decrease in volume of both cell and nucleus, high mortality, and no division. The controls give a set of curves similar to those previously obtained. The curves for the  $\text{CuCl}_2$ -treated cells that were transferred to GSH solution lie in an intermediate position. Attention is particularly directed to the curve showing the change in nuclear volume. It will be seen that the course of the curve indicates a growth that almost equals that for the controls in saline on the second day. The corresponding curve for  $\text{CuCl}_2$ -treated cells transferred to saline, however, at no time shows any indication of increase in volume. This again illustrates the stimulating effect of GSH upon the increase in volume of the nucleus in *Amoebae*.

## DISCUSSION OF PRINCIPAL RESULTS

In this investigation new experimental facts have been discovered by the application of statistical methods. As in our previous work, definite conclusions are justifiable only if the behavior of a sufficiently large number of cells is considered, for the response of individual cells to a given set of conditions varies considerably. We also want to qualify at the outset the assumption that an increase in nuclear volume or total cell volume indicates normal growth under our experimental conditions. This we believe to be true for cells exposed to saline or dilute glutathione solutions not longer than two to three days, for the reason that during this time nuclear and cytoplasmic divisions occur, a fact which certainly shows that these cells are not under pathological conditions. However, this does not infer that the conditions are perfect, as about 10 to 15 per cent of the cells died during the course of the experiments, whether exposed to saline or glutathione.<sup>3</sup>

The first outstanding fact is the *growth of the nucleus under survival conditions in cells immersed in saline* and the *increased rate of nuclear growth in cells exposed to glutathione*. (Fig. 5.) Under both conditions the rate of nuclear growth is greatest in the small cells, less in the medium-sized cells, and least in the largest cells, thus indicating that *the rate of nuclear growth of the average cell decreases with age*. With the exception of the smallest cells in the controls (Group A, fig. 5) the nuclear growth is accompanied in all experiments by a decrease in total cell volume.<sup>4</sup> This decrease in cell volume (essentially of cytoplasm) over the whole period of the experiments is least pronounced in small cells and is more marked in the larger cells. This fact suggests that the nucleus grows at the expense of the cytoplasm—the immediate environment of the nucleus—just as the cell as a whole depends for its growth on the external environment.

The greater tendency of the smallest cells to increase in volume, both of nucleus and cytoplasm, conforms to the results of Chalkley (1931), which show that under normal *cultural conditions* the growth rate of *Amoebae* is most rapid in the young (small) cell and progressively decreases with age (increasing volume).

The general effect of exposure of *Amoebae* to very high dilutions of  $\text{CuCl}_2$  (m/500,000,000) is a gradual decrease in both cell and nuclear volume. However, it appears (fig. 5) that nuclear growth proceeds

<sup>3</sup> The mortality in very dilute copper solution (m/500,000,000) was practically the same as in the other two solutions, with exception that the largest cells (Group C) showed an increase over the controls.

<sup>4</sup> The increase in cell volume on the first day in the cells of 0.001 to 0.0015 cubic millimeter volume does not appear attributable to a pathological effect consequent on transfer to saline from the culture, since the volume changes in such cells that were found dead on the third day show, on an average, an increase in volume the first day not materially different (12 per cent) from the average for all cells, but on the second their average volume drops sharply (23 to 77 per cent). This would surely indicate that decrease rather than increase of cell volume is associated with any pathological change that occurred. A further argument against the interpretation that this increase in cell volume in the small cells is due to pathological change is the fact that glutathione evoked from this class of cells the greatest per cent increase over controls in nuclear growth and division.



during the first day in cells of the smallest original cell volume. In a broad sense *copper inhibits nuclear growth, whereas glutathione increases it*. Furthermore, the inhibiting effect of copper on nuclear growth is overcome to some extent by glutathione. (Fig. 10.) There is, therefore, at least an indication of a partial antagonism of the two substances with regard to nuclear growth, in conformity with the clear-cut antagonism of glutathione on the toxic action of copper. Whether this antagonism is explained by the chemical affinity of copper for glutathione and other physiological SH compounds as is likely or whether other factors also enter into this problem can not be decided on the basis of the present evidence.

Having described the action of copper and glutathione on nuclear growth, it is desirable to discuss these data in relation to cell division as

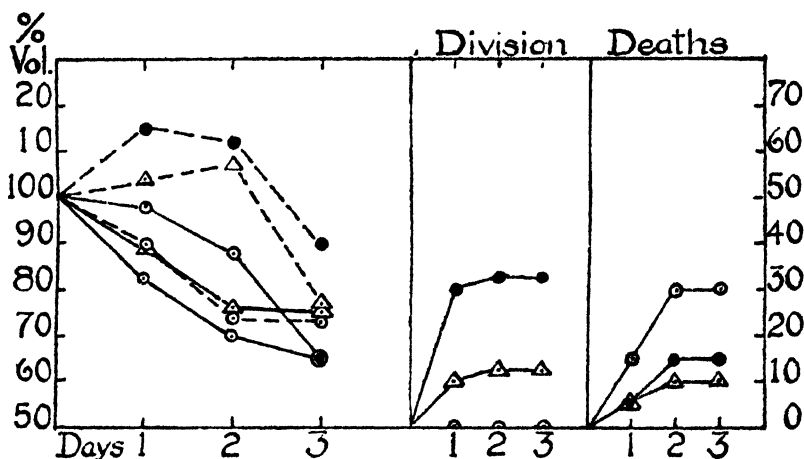


FIGURE 10.—Graph showing per cent change in average volume of cell and nucleus in *Amoebae* of average original cell volume of 0.0023 when immersed under survival conditions in standard saline, when immersed one and one-half hours under similar conditions in m/50,000  $\text{CuCl}_2$  solution, and transferred to (1) saline, (2) m/50,000 GSH solution; also the per cent division and per cent mortality for these three groups. Solid symbols, *Amoebae* in saline throughout; open circles, copper-treated *Amoebae* transferred to saline; open triangles, copper-treated *Amoebae* transferred to glutathione. In the graph for volume changes the dotted lines are curves for nucleus and the solid lines curves for cell volume changes.

affected by glutathione or copper. Considering the data on nuclear growth (fig. 5) and those on cell division (fig. 6), it is obvious that taking the three classes of cells, irrespective of size—those in glutathione, those in copper solution, and the saline controls—the group showing the greatest rate of nuclear growth also shows the greatest per cent of division.

This at once suggests that nuclear division is a function of nuclear growth. However, it is evident that the nuclear growth rate is not the only controlling factor, for in all three solutions the smallest cells grow most rapidly and divide least. Voegtlin and Chalkley (1930)

showed that per cent division, under the conditions obtaining in these experiments, is a function of original cell volume. Chalkley (1931) found that nuclear volume is related to cell volume. It is desirable, therefore, to correlate original nuclear volume and per cent division for the cells in glutathione, saline, and copper solutions. Figure 11 (unbroken curves) definitely shows that the per cent division in all three solutions is a function of the original nuclear volume of the cells.

Glutathione, as we have just shown, stimulates the rate of growth of the nucleus, and the per cent of division is a function of the nuclear volume. The conclusion seems obvious that glutathione stimulates cells to division by stimulating nuclear growth and apparently by facilitating the transfer of material from cytoplasm to nucleus. It is quite evident, however, that this stimulation of nuclear growth by glutathione is only one factor in division, since it could result only in an increase in the rate of nuclear growth, and rate is not directly correlated with division. We therefore reconsidered the available data to determine if some of the other factors controlling division could not be ascertained.

Chalkley (1931) pointed out that nuclear division under *cultural* conditions normally occurs within a definite range of cell volume (0.0018 to 0.003 cubic millimeter, approximately), the average cell volume at which nuclear division occurs being 0.00275 cubic millimeter, approximately.

From his curve for the nucleocytoplasmic ratio it is possible to calculate the nuclear volume for a cell with a volume of 0.00275 cubic millimeter. This is 0.0000203 cubic millimeter nuclear volume, or the optimum nuclear volume for division. Since Chalkley has shown that cell division is less likely to occur if a cell volume of 0.00275 cubic millimeter is exceeded, it is probable that if the corresponding nuclear volume (0.00002 cubic millimeter) is exceeded, nuclear division is also less likely to occur.

We therefore applied these considerations holding true for cultural conditions to the data obtained in the present investigation under survival conditions. We assume then that 0.00002 cubic millimeter is the optimum nuclear volume for nuclear division. Inasmuch as the nuclear volumes of divided cells at the exact time of division was not observed, these volumes were approximated by taking for each cell the mean between the nuclear volume at the observation preceding division and the sum of the nuclear volumes of the daughter cells at the first observation (less than 24 hours) after division. The averages of these means were for the 27 cells that divided in saline 0.0000205 and for the 25 in glutathione 0.0000181. For the two divided cells in the copper solution it was 0.0000193. The difference in these values is not statistically significant. Now, as set forth

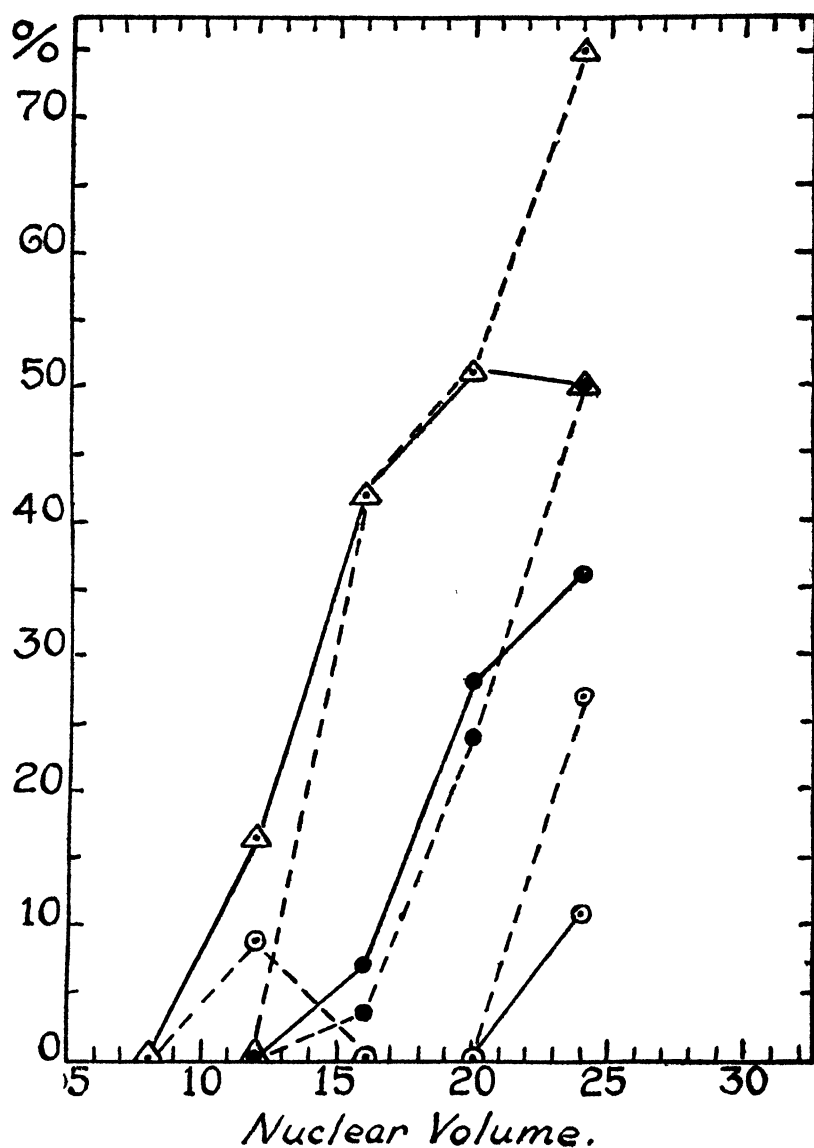


FIGURE 11.—Graph showing the relation between (A) the percentage of nuclear division on the first day and the average original nuclear volume (unbroken lines); (B) the percentage of *Amoebae* that attained a nuclear volume equal to or in excess of 25.7 arbitrary units—0.00002 cubic millimeter on the first day and the average original nuclear volume (broken lines). Open triangles, *Amoebae* in m/100,000 GSH; solid symbols, *Amoebae* in saline; open circles, *Amoebae* in m/500,000 CuCl<sub>2</sub>. (NOTE.—The number of *Amoebae* observed was as follows: Nuclear volume 10 to 14; saline 21; GSH 6; CuCl<sub>2</sub> 12. Nuclear volume 14 to 18; saline 28; GSH 15.5; CuCl<sub>2</sub> 16. Nuclear volume 18 to 22; saline 25; GSH 16.5; CuCl<sub>2</sub> 13.5. Nuclear volume 22 to 26; saline 36; GSH 12; CuCl<sub>2</sub> 18.5)

above, this value of 0.00002 was considered to be the nuclear volume at which the probability of nuclear division is maximal. If this is true, two further relations should hold: First, the distribution of the volumes of the nuclei that divided should be distributed closely about this value, and, second, the percentage of division that occurred on the first day, as cells of larger and larger original nuclear volume were employed in these experiments, should be (whether the solution employed was GSH, Cu, or control) closely related to the percentage of the cells in each class that on that day grew to a nuclear volume exceeding 0.00002 cubic millimeter. However, such a correlation should not hold beyond a point where a large majority of the cells exceeded this value, for the nuclei of a fair proportion of such cells would necessarily considerably exceed the optimum nuclear volume and be therefore less likely to divide. The test lay in (a) plotting the distribution of the divided cells according to their nuclear volume at division, (b) plotting the percentage distribution of the cells of different nuclear volumes that exceeded the volume of 0.00002 cubic millimeter, and comparing this with the curve similarly obtained for the percentage of division in the same cells. The resulting curves are given in Figure 12 and in the curves shown in broken line in Figure 11. It is plain that the prediction holds.

If we now consider the action of glutathione and copper upon division in *Amoeba* under survival conditions we must give due weight to the following factors: (1) The influence of the age of any cell as expressed in rate of nuclear growth, and (2) the apparently definite average optimum nuclear volume at which nuclear division is most probable. These two factors, it appears, are intrinsic characteristics of all *Amoebae* and therefore determining factors in the action of glutathione and copper upon *Amoeba*. Realizing this, we can conclude as follows: Glutathione stimulates nuclear division by stimulating nuclear growth. It does this probably by facilitating transfer of cytoplasmic material to the nucleus. This transfer of material for nuclear growth is not produced *de novo* by glutathione, as it apparently also takes place, though to a lesser extent, in cells not exposed to glutathione. There is no indication at present that glutathione can evoke nuclear division at a smaller mean nuclear volume than the optimum nuclear volume at which controls divide—i. e., glutathione does not stimulate division of “immature” cells. Copper, in infinitesimal amounts, depresses nuclear growth and division. Here, again, the maturity of the cell appears as conditioning the degree of depression, and the mean nuclear volume at division is probably the same as in the controls. The depressing effect of copper in certain concentrations on nuclear growth is to some extent antagonized by subsequent exposure to glutathione.

It might be noted that these effects, concerned as they evidently are with rates of growth, suggest that the effect of both glutathione and copper may possibly be linked with the action of intracellular enzymes. The recent work of Waldschmidt-Leitz and Grassmann and his collaborators on the effect of glutathione and copper on proteolytic enzymes of the cathepsin type appears very suggestive in

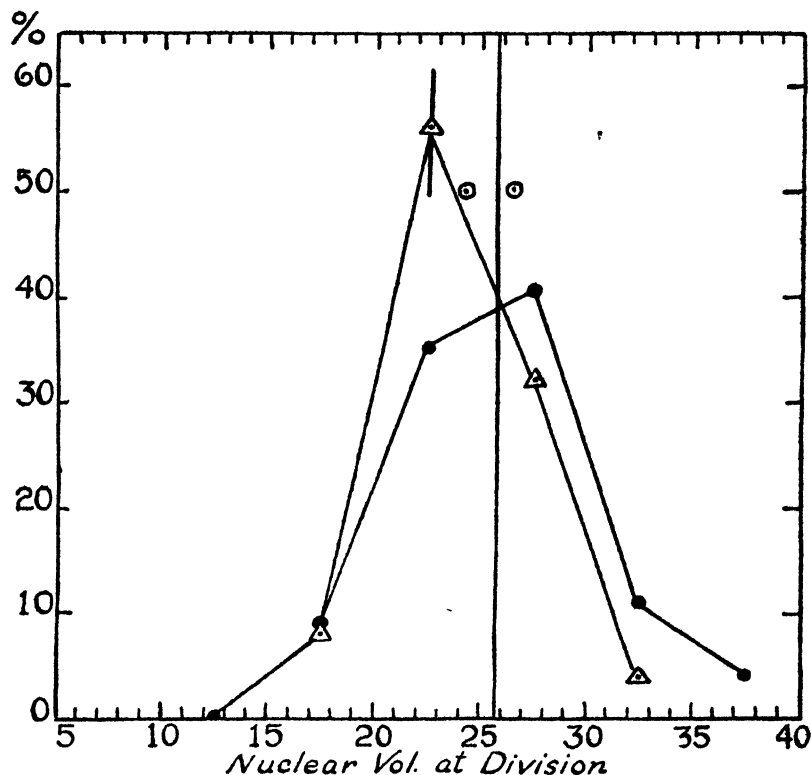


FIGURE 12.—Graph showing the distribution as to volume of nucleus at division in the cells that divided in saline, m/100,000 GSH, and m/500,000,000  $\text{CuCl}_2$ . Open triangles, cells in glutathione; solid circles, cells in saline; open circles, cells in  $\text{CuCl}_2$ . The full vertical line shows the optimum nuclear volume for division and coincides with the mean volume at division for the nuclei of the cells in saline. The short vertical line indicates the mean nuclear volume for the cells in glutathione. Twenty-five cells divided in the glutathione and twenty-seven in the saline solution; only two in the  $\text{CuCl}_2$  solution. The points for the  $\text{CuCl}_2$  cells indicate the actual nuclear volumes of these two cells at division.

this respect. They found that SH glutathione activates cathepsin and copper inhibits this enzyme. It is interesting that the molar concentrations of glutathione for activation are far higher than the molar copper concentrations, which are necessary for inhibition of proteolysis. A similar quantitative difference between effective concentrations of glutathione and copper exists with respect to the action of these two substances on nuclear growth and division in *Amoeba*.

As a more general conclusion it may be stated that the work with glutathione and copper has demonstrated the possibility of controlling cell division by chemical means. It is important to continue the search for other active chemical agents which influence cell division in very high dilution.

#### SUMMARY

1. In *Amoebae* deprived of food (under survival conditions) and immersed in saline, the nucleus, on an average, continues to increase in volume for approximately 48 hours. The cell, except in small cells 0.001 to 0.0015 cubic millimeter in volume, steadily decreases in volume from the time of immersion. In the cells from 0.001 to 0.0015 cubic millimeter the cell grows in volume for 24 hours and then decreases in volume. The increase in nuclear and decrease in cell volumes are inverse and direct functions, respectively, of the cell volume at the time of immersion. The per cent nuclear division in a given group of such *Amoebae* is a direct function of the original cell or nuclear volume, over the range of volumes used (0.001 to 0.0025 cubic millimeter for the cell and 0.000008 to 0.00002 cubic millimeter for the nucleus).

2. If a solution of m/100,000 glutathione in saline is used instead of simple saline the per cent rate of increase in volume of the nucleus is increased over that in saline. The rate of decrease in cell volume is also greater, likewise the percent of division occurring, and apparently the rate of digestion of material in food vacuoles.

3. If a solution of m/500,000,000 copper in saline is used instead of simple saline, the increase in volume of the nucleus is replaced by a decrease in volume. The rate of decrease in cell volume is increased in respect to *Amoebae* in saline. The rate of digestion is apparently decreased.

4. All effects of glutathione or copper are functions of original average cell or nuclear volume at immersion.

5. In all solutions the average nuclear volume at division is (within the limit of error) the same and is approximately 0.00002 cubic millimeter.

6. In all solutions the percentage of division in a given group during the first 24 hours varies directly as the percentage (of that group) in which the nuclei attain a volume of 0.00002 cubic millimeter during that period, except for groups having an original nuclear volume of 0.000016 cubic millimeter or over.

It is concluded that the increase of per cent division in *Amoebae* by glutathione and probably its inhibition by copper results from the effect of the reagents upon the nuclear volume.

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## SUMMARY OF CERTAIN NOTIFIABLE DISEASES IN THE UNITED STATES, 1930<sup>1</sup>

There is presented herewith a summary of the reported prevalence of certain of the important communicable diseases in the United States during the calendar year 1930. The rates have been computed from data furnished by the health officers of the several States, the District of Columbia, and insular possessions. Morbidity and mortality data for the year were received from all States (including the District of Columbia), except that mortality figures were not received from Colorado.

The populations used in computing case and death rates were estimated as of July 1, 1930, based on the 1920 and 1930 census figures.

The estimated expectancy given for some of the diseases represents an attempt to ascertain from the experience of recent years how many cases of the disease under consideration might be expected in 1930.

In comparing the figures for 1930 with the estimated expectancy, or with the figures for preceding years, it should be borne in mind that there has been a gradual improvement in the reporting of communicable diseases during the last few years. An increase in the number of cases reported may be due to better reporting of the particular disease rather than to an increase in the number of cases occurring.

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<sup>1</sup> It has been found impossible to publish the detailed information by disease and States at the present time. This information has been compiled and prepared for the printer, however, and it is hoped that it will be possible to publish it at some future date. It is expected to issue it as a supplement to the PUBLIC HEALTH REPORTS, as similar tabulations have been issued annually since 1912.

## SUMMARY

## CHICKEN POX

48 States: <sup>1</sup>

Cases reported, 1930 (population, 123,191,519) .....	228, 354
Estimated expectancy, based on years 1923-1929 .....	192, 372
Cases per 1,000 inhabitants, 1930 .....	1. 854
Cases per 1,000 inhabitants, estimated expectancy .....	1. 651

46 States: <sup>1</sup>

Cases reported, 1930 (population, 120,138,216) .....	218, 786
Cases per 1,000 inhabitants, 1930 .....	1. 821
Deaths registered, 1930 .....	120
Deaths per 1,000 inhabitants, 1930 .....	0. 001
Cases reported for each death registered, 1930 .....	1, 823

## DIPHTHERIA

48 States: <sup>1</sup>

Cases reported, 1930 (population, 123,191,519) .....	66, 576
Estimated expectancy, based on years 1923-1929 .....	99, 918
Cases per 1,000 inhabitants, 1930 .....	0. 540
Cases per 1,000 inhabitants, estimated expectancy .....	0. 857

47 States: <sup>1</sup>

Cases reported, 1930 (population, 122,153,383) .....	66, 106
Cases per 1,000 inhabitants, 1930 .....	0. 541
Deaths registered, 1930 .....	5, 971
Deaths per 1,000 inhabitants, 1930 .....	0. 049
Cases reported for each death registered, 1930 .....	11

## GONORRHEA

41 States: <sup>1</sup>

Cases reported, 1930 (population, 115,811,882) .....	158, 054
Cases per 1,000 inhabitants, 1930 .....	1. 365

## INFLUENZA

31 States: <sup>1</sup>

Cases reported, 1930 (population, 67,136,455) .....	101, 765
Cases per 1,000 inhabitants, 1930 .....	1. 516

47 States: <sup>1</sup>

Deaths registered, 1930 (population, 122,153,383) .....	22, 898
Deaths per 1,000 inhabitants, 1930 .....	0. 187

30 States: <sup>1</sup>

Cases reported, 1930 (population, 66,098,319) .....	101, 745
Cases per 1,000 inhabitants, 1930 .....	1. 539
Deaths registered, 1930 .....	13, 475
Deaths per 1,000 inhabitants, 1930 .....	0. 204
Cases reported for each death registered, 1930 .....	8

## LETHARGIC ENCEPHALITIS

43 States: <sup>1</sup>

Deaths registered, 1930 (population 120,912,050) .....	1, 094
Deaths per 1,000 inhabitants, 1930 .....	0. 009

<sup>1</sup> The District of Columbia is also included.



## MALARIA

<b>32 States:</b>	
Cases reported, 1930 (population 97,323,832) .....	98, 482
Cases per 1,000 inhabitants, 1930 .....	1. 012
<b>36 States:</b>	
Deaths registered, 1930 (population 115,455,724) .....	3, 426
Deaths per 1,000 inhabitants, 1930 .....	0. 030
<b>31 States:</b>	
Cases reported, 1930 (population 96,285,696) .....	98, 481
Cases, per 1,000 inhabitants, 1930 .....	1. 023
Deaths registered, 1930 .....	3, 316
Deaths per 1,000 inhabitants, 1930 .....	0. 034
Cases reported for each death registered, 1930 .....	30

## MEASLES

<b>48 States:<sup>1</sup></b>	
Cases reported, 1930 (population 123,191,519) .....	419, 465
Estimated expectancy, based on years 1923-1929 .....	381, 012
Cases per 1,000 inhabitants, 1930 .....	3. 405
Cases per 1,000 inhabitants, estimated expectancy .....	3. 270
<b>47 States:<sup>1</sup></b>	
Cases reported, 1930 (population 122,153,383) .....	407, 153
Cases per 1,000 inhabitants, 1930 .....	3. 333
Deaths registered, 1930 .....	3, 433
Deaths per 1,000 inhabitants, 1930 .....	0. 028
Cases reported for each death registered, 1930 .....	119

## MENINGOCOCCUS MENINGITIS

<b>44 States:<sup>1</sup></b>	
Cases reported, 1930 (population 120,387,037) .....	8, 384
Estimated expectancy, based on years 1923-1929 .....	3, 031
Cases per 1,000 inhabitants, 1930 .....	0. 070
Cases per 1,000 inhabitants, estimated expectancy .....	0. 027
<b>47 States:<sup>1</sup></b>	
Deaths registered, 1930 (population 122,153,383) .....	3, 747
Deaths per 1,000 inhabitants, 1930 .....	0. 031
<b>43 States:<sup>1</sup></b>	
Cases reported, 1930 (population 119,348, 901) .....	8, 299
Cases per 1,000 inhabitants, 1930 .....	0. 070
Deaths registered, 1930 .....	3, 657
Deaths per 1,000 inhabitants, 1930 .....	0. 031
Cases reported for each death registered, 1930 .....	2

## MUMPS

<b>43 States:<sup>2</sup></b>	
Cases reported, 1930 (population 108,726,790) .....	124, 259
Estimated expectancy, based on years 1923-1929 .....	95, 334
Cases per 1,000 inhabitants, 1930 .....	1. 143
Cases per 1,000 inhabitants, estimated expectancy .....	0. 927
<b>43 States:<sup>2</sup></b>	
Deaths registered, 1930 (population 112,304,683) .....	79
Deaths per 1,000 inhabitants, 1930 .....	0. 001

<sup>1</sup> The District of Columbia is also included.    <sup>2</sup> Not the same group of States for cases and deaths.

## 41 States:

Cases reported, 1930 (population 105,673,487).....	115, 704
Cases per 1,000 inhabitants, 1930.....	1. 095
Deaths registered, 1930.....	72
Deaths per 1,000 inhabitants, 1930.....	0. 001
Cases reported for each death registered, 1930.....	1, 607

## PELLAGRA

17 States:<sup>1</sup>

Cases reported, 1930 (population 48,261,552).....	24, 747
Cases per 1,000 inhabitants, 1930.....	0. 513

41 States:<sup>1</sup>

Deaths registered, 1930 (population 120,004,052).....	7, 138
Deaths per 1,000 inhabitants, 1930.....	0. 059

## PNEUMONIA (ALL FORMS)

46 States:<sup>1</sup>

Deaths registered, 1930 (population 117,894,080).....	97, 960
Deaths per 1,000 inhabitants, 1930.....	0. 831

## POLIOMYELITIS (INFANTILE PARALYSIS)

45 States:<sup>1</sup>

Cases reported, 1930 (population 116,182,887).....	9, 188
Estimated expectancy, based on years 1923-1929.....	3, 707
Cases per 1,000 inhabitants, 1930.....	0. 079
Cases per 1,000 inhabitants, estimated expectancy.....	0. 034

47 States:<sup>1</sup>

Deaths registered, 1930 (population 122,153, 383).....	1, 395
Deaths per 1,000 inhabitants, 1930.....	0. 011

44 States:<sup>1</sup>

Cases reported, 1930 (population 115,144,751).....	9, 112
Cases per 1,000 inhabitants, 1930.....	0. 079
Deaths registered, 1930.....	1, 321
Deaths per 1,000 inhabitants, 1930.....	0. 011
Cases reported for each death registered, 1930.....	7

## SCARLET FEVER

48 States:<sup>1</sup>

Cases reported, 1930 (population 123,191,519).....	174, 221
Estimated expectancy, based on years 1923-1929.....	177, 828
Cases per 1,000 inhabitants, 1930.....	1. 414
Cases per 1,000 inhabitants, estimated expectancy.....	1. 526

47 States:<sup>1</sup>

Cases reported, 1930 (population 122,153,383).....	173, 102
Cases per 1,000 inhabitants, 1930.....	1. 417
Deaths registered, 1930.....	2, 215
Deaths per 1,000 inhabitants, 1930.....	0. 018
Cases reported for each death registered, 1930.....	78

## SEPTIC SORE THROAT

## 28 States:

Cases reported, 1930 (population 68,824,667).....	3, 577
Cases per 1,000 inhabitants, 1930.....	0. 052

<sup>1</sup> The District of Columbia is also included.

39 States: <sup>1</sup>

Deaths registered, 1930 (population 101,260,067) .....	1, 205
Deaths per 1,000 inhabitants, 1930 .....	0. 012

## SMALLPOX

48 States: <sup>1</sup>

Cases reported, 1930 (population 123,191,519) .....	48, 907
Estimated expectancy, based on years 1923-1929 .....	31, 944
Cases per 1,000 inhabitants, 1930 .....	0. 397
Cases per 1,000 inhabitants, estimated expectancy .....	0. 274

47 States: <sup>1</sup>

Cases reported, 1930 (population 122,153,383) .....	48, 329
Cases per 1,000 inhabitants, 1930 .....	0. 396
Deaths registered, 1930 .....	170
Deaths per 1,000 inhabitants, 1930 .....	0. 001
Cases reported for each death registered, 1930 .....	284

## SYPHILIS

41 States: <sup>1</sup>

Cases reported, 1930 (population 115,811,882) .....	221, 735
Cases per 1,000 inhabitants, 1930 .....	1. 915

## TUBERCULOSIS (ALL FORMS)

46 States: <sup>1</sup>

Deaths registered, 1930 (population 121,715,337) .....	83, 523
Deaths per 1,000 inhabitants, 1930 .....	0. 686

## TUBERCULOSIS (RESPIRATORY SYSTEM)

42 States: <sup>1</sup>

Deaths registered, 1930 (population 114,460,377) .....	72, 158
Deaths per 1,000 inhabitants, 1930 .....	0. 630

## TYPHOID FEVER

48 States: <sup>1</sup>

Cases reported, 1930 (population 123,191,519) .....	27, 201
Estimated expectancy, based on years 1923-1929 .....	32, 312
Cases per 1,000 inhabitants, 1930 .....	0. 221
Cases per 1,000 inhabitants, estimated expectancy .....	0. 277

47 States: <sup>1</sup>

Cases reported, 1930 (population 122,153,383) .....	26, 978
Cases per 1,000 inhabitants, 1930 .....	0. 221
Deaths registered, 1930 .....	6, 072
Deaths per 1,000 inhabitants, 1930 .....	0. 050
Cases reported for each death registered, 1930 .....	4

## WHOOPIING COUGH

48 States: <sup>1</sup>

Cases reported, 1930 (population 123,191,519) .....	166, 914
Estimated expectancy, based on years 1923-1929 .....	167, 154
Cases per 1,000 inhabitants, 1930 .....	1. 355
Cases per 1,000 inhabitants, estimated expectancy .....	1. 434

47 States: <sup>1</sup>

Cases reported, 1930 (population 122,153,383) .....	164, 375
Cases per 1,000 inhabitants, 1930 .....	1. 346
Deaths registered, 1930 .....	5, 455
Deaths per 1,000 inhabitants, 1930 .....	0. 045
Cases reported for each death registered, 1930 .....	30

<sup>1</sup> The District of Columbia is also included.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Revocation by board of health of milk permit.*—(New York Supreme Court, Appellate Division; *Henry Morris, Inc., v. Department of Health of City of New York et al.*, 254 N. Y. S. 90; decided Dec. 18, 1931.) A mandamus proceeding was brought to require the department of health and the board of health of New York City to rescind the revocation of the petitioner's permit to conduct a wholesale and retail milk business and to reinstate the permit. One of the defenses was that a certain named person, who was alleged to bear a bad reputation in the milk business, had been found to be in charge of petitioner's milk depot after the petitioner had been notified that such person's active connection with it must cease. The court held that this defense was sufficient in law "for, if proved, the action of respondents could not be held to be arbitrary, tyrannical, or unreasonable."

Another defense was that, after petitioner's milk permit had been revoked, it had reapplied for a permit; that such permit was issued, as the person to whom objection was made had ceased to be connected with the petitioner; and that petitioner held such permit until it transferred its business to a successor or affiliated corporation to which the permit was issued. This defense was also held to be sufficient in law, the court saying:

No order of peremptory mandamus can issue to require respondents to do what they have already done, viz, issue a permit to petitioner. That these averments set forth facts which have arisen since defendants denied petitioner's earlier application for a permit will not prevent their consideration upon the trial. Consequently, their inclusion in the return was proper. There is no rule requiring that the only facts in a return upon which a defense can be based must have occurred at or before the time when the officer or board, whose decision is sought to be reviewed, acted. \* \* \*

## DEATHS DURING WEEK ENDED FEBRUARY 13, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended February 13, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Feb 13, 1932	Corresponding week, 1931
Policies in force.....	74, 068, 315	75, 151, 201
Number of death claims.....	11, 487	15, 397
Death claims per 1,000 policies in force, annual rate.....	8. 1	10. 7
Death claims per 1,000 policies, first 6 weeks of year.....		
annual rate.....	9. 7	11. 1

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended February 13, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Feb. 13, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 6 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8, 275	11.9	648	54	14.0	903	12.0	14.3
Akron.....	41	8.1	5	62	8.5	5	7.8	8.6
Albany <sup>4</sup> .....	26	10.4	2	41	22.6	3	15.1	16.0
Atlanta <sup>5</sup> .....	69	12.7	13	127	14.1	8	15.5	15.5
White.....	36	10.0	9	133	11.6	4	12.0	13.3
Colored.....	33	18.0	4	115	19.0	4	22.4	19.9
Baltimore <sup>6</sup> .....	205	13.1	23	81	19.5	18	13.8	18.2
White.....	157	12.2	14	64	18.0	13	12.9	16.8
Colored.....	48	16.7	9	145	20.3	5	17.6	24.4
Birmingham <sup>6</sup> .....	66	12.5	6	63	12.0	4	12.3	14.5
White.....	35	10.7	4	66	9.4	2	9.9	10.8
Colored.....	31	15.4	2	54	16.3	2	16.1	20.4
Boston.....	222	14.7	15	45	20.3	25	14.9	17.8
Bridgeport.....	29	10.3	3	53	11.3	3	11.4	14.2
Buffalo.....	139	12.3	12	58	15.8	18	13.0	14.8
Cambridge.....	34	15.5	4	83	18.7	1	13.9	14.6
Camden.....	31	13.6	3	53	10.7	3	14.5	18.3
Canton.....	14	6.8	2	50	13.2	3	9.7	11.1
Chicago <sup>5</sup> .....	815	12.1	72	71	13.0	66	10.8	12.7
Cincinnati.....	155	17.5	8	51	16.6	9	16.3	18.2
Cleveland.....	192	10.9	19	62	13.2	25	10.8	11.5
Columbus.....	84	14.7	4	40	14.3	6	15.3	14.2
Dallas <sup>6</sup> .....	61	11.3	8	13	13.0	10	11.3	12.9
White.....	43	9.6	6	12	12.0	7	10.5	11.7
Colored.....	18	19.3	2	17	17.6	3	15.2	18.7
Dayton.....	67	14.7	4	57	11.3	5	11.0	11.7
Denver.....	80	14.2	5	49	15.4	5	17.1	15.9
Des Moines.....	47	16.8	0	0	13.4	4	12.0	12.6
Detroit.....	280	8.5	29	52	11.6	50	8.3	9.2
Duluth.....	24	12.3	0	0	7.2	3	10.0	11.5
El Paso.....	25	12.2	4	1	14.9	3	15.6	20.0
Erie.....	37	16.2	1	21	14.6	3	10.9	11.5
Fall River <sup>7</sup> .....	32	14.5	1	27	16.3	7	12.7	13.3
Flint.....	28	8.6	7	103	4.8	3	8.1	7.2
Fort Worth <sup>6</sup> .....	28	8.6	4	8	8.4	1	11.0	11.8
White.....	25	0.1	4	1	6.7	1	10.0	11.0
Colored.....	3	5.9	0	1	17.3	0	16.3	16.0
Grand Rapids.....	32	0.6	1	17	8.8	2	8.0	10.0
Houston <sup>6</sup> .....	70	11.3	10	12	12.3	4	10.6	12.1
White.....	54	11.8	8	1	9.4	3	9.8	10.8
Colored.....	16	9.8	2	1	20.1	1	12.7	15.5
Indianapolis <sup>6</sup> .....	95	13.3	5	41	16.5	9	13.4	14.8
White.....	78	12.4	3	28	14.9	8	12.8	14.2
Colored.....	17	19.3	2	137	27.7	1	17.6	19.2
Jersey City.....	66	10.8	11	91	13.9	13	11.0	15.1
Kansas City, Kans. <sup>6</sup> .....	33	13.9	3	66	16.1	5	13.7	16.4
White.....	23	12.0	1	27	16.8	5	13.0	15.2
Colored.....	10	22.1	2	256	13.3	0	16.9	21.4
Kansas City, Mo.....	108	13.6	9	102	16.6	12	12.4	14.9
Knoxville <sup>6</sup> .....	18	8.4	6	152	12.4	5	11.4	14.6
White.....	15	8.4	5	140	9.7	4	10.7	13.2
Colored.....	3	8.6	1	270	26.4	1	16.2	21.5
Long Beach.....	21	7.8	0	0	12.7	1	10.9	11.0
Los Angeles.....	298	11.3	13	39	10.2	25	12.5	12.5
Louisville <sup>6</sup> .....	77	13.0	5	46	14.4	13	14.7	18.0
White.....	64	12.8	4	42	13.4	10	13.1	16.1
Colored.....	13	14.2	1	75	19.7	3	23.3	28.6
Lowell <sup>7</sup> .....	29	15.1	3	78	14.0	4	15.4	15.3
Lynn.....	21	10.7	2	57	10.7	1	11.1	13.5
Memphis <sup>6</sup> .....	105	20.8	9	98	9.5	5	17.5	16.4
White.....	62	19.4	4	68	7.5	2	13.5	14.2
Colored.....	53	27.5	5	151	12.7	3	24.0	19.9
Miami <sup>6</sup> .....	29	13.3	1	28	15.8	1	13.8	13.5
White.....	22	13.0	0	0	17.3	1	13.3	13.6
Colored.....	7	14.5	1	101	10.3	0	15.5	13.4
Milwaukee.....	116	10.1	6	29	12.8	19	9.2	10.8

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended February 13, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Feb. 13, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 6 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Minneapolis.....	113	12.3	6	39	12.9	11	9.9	12.5
Nashville <sup>4</sup> .....	42	14.0	3	45	15.1	6	13.6	16.7
White.....	29	13.3	3	59	13.0	2	13.1	14.7
Colored.....	13	15.8	0	0	20.7	4	14.8	21.9
New Bedford <sup>1</sup> .....	34	15.8	2	58	17.1	2	12.5	13.7
New Haven.....	45	14.5	1	20	11.9	2	13.0	13.3
New Orleans <sup>5</sup> .....	140	15.4	13	71	20.2	15	15.7	21.0
White.....	80	12.4	5	44	15.5	8	13.0	17.5
Colored.....	60	22.8	8	131	31.7	7	22.5	20.4
New York.....	1,370	9.9	90	40	12.6	162	10.6	14.8
Bronx Borough.....	172	6.5	7	20	9.0	22	8.1	10.7
Brooklyn Borough.....	469	9.2	36	40	12.1	62	9.6	14.0
Manhattan Borough.....	547	10.1	41	59	18.8	61	16.4	22.0
Queens Borough.....	144	6.2	5	21	8.4	15	6.8	10.1
Richmond Borough.....	38	11.9	1	20	12.1	2	13.3	14.6
Newark, N. J.....	90	10.5	6	33	15.7	14	10.6	15.0
Oakland.....	65	11.4	4	50	8.2	4	12.0	11.7
Oklahoma City.....	44	11.2	3	41	10.9	7	10.2	11.6
Omaha.....	85	20.3	9	102	14.2	4	14.9	14.6
Paterson.....	26	9.8	0	0	15.0	4	13.0	10.2
Peoria.....	25	11.8	1	28	15.9	2	11.8	15.6
Philadelphia.....	444	11.7	25	39	16.0	57	12.5	17.4
Pittsburgh.....	182	14.0	25	114	20.2	40	13.7	17.4
Portland, Oreg.....	72	12.1	5	64	11.7	5	12.7	13.1
Providence.....	76	15.5	10	97	17.4	7	14.9	16.1
Richmond <sup>6</sup> .....	69	19.5	6	90	17.0	6	15.8	18.2
White.....	42	16.6	2	45	14.3	3	13.5	14.8
Colored.....	27	26.7	4	183	23.7	3	21.6	26.6
Rochester.....	70	10.9	3	29	15.2	8	11.7	13.5
St. Louis.....	192	12.1	8	29	24.1	39	14.2	18.5
St. Paul.....	62	11.6	2	21	9.6	5	10.1	10.6
Salt Lake City <sup>3</sup> .....	31	11.2	2	31	10.2	1	11.9	12.4
San Antonio.....	54	11.4	8	13	13.0	11	14.0	15.8
San Diego.....	42	13.4	1	22	13.7	2	17.1	16.6
San Francisco.....	189	14.9	9	62	11.6	9	14.8	14.1
Schenectady.....	22	11.9	2	58	9.8	1	11.7	11.1
Seattle.....	84	11.7	6	60	11.1	5	11.9	12.5
Somerville.....	22	10.8	1	40	14.4	3	9.8	11.7
South Bend.....	18	8.5	1	29	10.6	5	8.8	7.7
Spokane.....	21	9.4	1	27	10.3	3	12.7	13.0
Springfield, Mass.....	43	14.6	4	67	15.4	3	13.2	14.1
Syracuse.....	39	9.4	3	39	13.7	10	12.1	13.4
Tacoma.....	28	13.5	1	28	13.1	4	12.2	13.8
Tampa <sup>7</sup> .....	30	9.7	3	86	16.4	3	11.9	16.4
White.....	11	6.8	2	70	15.1	2	11.0	14.9
Colored.....	9	20.6	1	158	21.1	1	14.9	21.9
Toledo.....	78	13.6	8	87	14.4	5	12.4	12.8
Trenton.....	42	17.7	4	79	17.7	5	15.4	19.2
Utica.....	29	14.7	1	28	14.3	1	16.6	16.5
Washington, D. C. <sup>8</sup> .....	173	18.3	24	135	18.8	7	16.2	19.0
White.....	111	10.2	15	123	17.9	2	14.4	16.8
Colored.....	62	23.7	9	160	21.2	5	21.0	24.8
Waterbury.....	21	10.8	3	99	12.4	2	9.9	11.4
Wilmington, Del. <sup>9</sup> .....	24	11.8	2	45	26.9	2	13.7	17.8
Worcester.....	45	11.8	2	28	15.1	1	12.5	16.4
Yonkers.....	17	6.3	0	0	10.1	6	7.2	11.7
Youngstown.....	36	10.7	2	32	11.8	4	10.1	11.0

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decrease 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended February 20, 1932, and February 21, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 20, 1932, and February 21, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931
<b>New England States.</b>								
Maine.....	6	2	40	105	589	23	0	0
New Hampshire.....	2				9	42	0	0
Vermont.....				4	45	9	0	0
Massachusetts.....	63	56	18	130	427	570	2	3
Rhode Island.....	2	2		6	686	1	0	0
Connecticut.....	9	12	21	105	278	414	2	1
<b>Middle Atlantid States:</b>								
New York.....	132	115	158	180	1,969	983	10	18
New Jersey.....	49	65	56	123	161	415	1	1
Pennsylvania.....	106	94			1,405	2,254	2	13
<b>East North Central States:</b>								
Ohio.....	33	27	22	95	267	184	0	4
Indiana.....	48	34	122	74	87	690	4	7
Illinois.....	120	124	164	273	228	1,291	12	9
Michigan.....	56	37	61	269	264	137	0	4
Wisconsin.....	18	21	301	152	274	260	1	1
<b>West North Central States:</b>								
Minnesota.....	8	14	3	7	25	40	1	1
Iowa.....	9	7	4		7		1	4
Missouri.....	32	37	19	206	21	873	2	8
North Dakota.....	1	13			54	16	0	0
South Dakota.....	2	10	228	2	81	15	0	0
Nebraska.....	6	12	269	2	65	1	3	2
Kansas.....	21	20	17	107	70	15	11	3
<b>South Atlantic States.</b>								
Delaware.....	2	2	6	41	2	27	0	0
Maryland.....	25	31	28	702	32	480	5	2
District of Columbia.....	20	4	2	12	3	84	0	2
Virginia.....							1	
West Virginia.....	26	11	96	186	396	66	1	2
North Carolina.....	28	31	52	395	243	466	1	6
South Carolina.....	12	13	564	4,191	49	104	0	4
Georgia.....	14	6	121	1,596	7	88	3	2
Florida.....	11	7	2	133	9	190	0	1
<b>East South Central States.</b>								
Kentucky.....	48	12	226	31	108	150	3	10
Tennessee.....	35	3	169	416	64	96	5	2
Alabama.....	23	41	92	350	2	497	0	7
Mississippi.....	11	16					2	8

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Feb. 21, 1932, 21 cases; 5 cases in Georgia, 1 case in Florida, 1 case in Alabama, and 14 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 20, 1932, and February 21, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931
<b>West South Central States:</b>								
Arkansas.....	9	8	65	208	3	15	0	1
Louisiana.....	32	71	10	159	6	—	1	3
Oklahoma <sup>1</sup> .....	15	22	945	28	12	34	0	0
Texas <sup>2</sup> .....	42	32	148	70	44	161	2	0
<b>Mountain States:</b>								
Montana.....	—	1	1,708	—	102	5	2	1
Idaho.....	1	—	3	—	—	1	1	1
Wyoming.....	—	—	—	6	1	3	0	1
Colorado.....	10	7	—	—	61	133	1	2
New Mexico.....	21	5	27	3	106	48	0	2
Arizona.....	6	5	68	10	—	222	0	4
Utah <sup>3</sup> .....	2	—	—	10	—	2	0	2
<b>Pacific States:</b>								
Washington.....	1	5	—	—	480	50	1	0
Oregon.....	8	15	257	26	104	78	0	0
California.....	45	53	303	513	315	996	8	6
Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931
<b>New England States:</b>								
Maine.....	0	0	38	40	0	0	2	1
New Hampshire.....	0	0	28	3	0	0	0	0
Vermont.....	0	0	7	1	3	1	0	0
Massachusetts.....	1	0	543	399	0	0	4	4
Rhode Island.....	0	0	49	24	0	0	0	4
Connecticut.....	0	0	112	55	2	0	1	1
<b>Middle Atlantic States:</b>								
New York.....	5	3	1,421	836	2	13	10	7
New Jersey.....	0	0	279	299	0	0	2	2
Pennsylvania.....	1	1	613	646	0	0	13	25
<b>East North Central States:</b>								
Ohio.....	2	1	281	293	34	54	3	6
Indiana.....	0	0	101	340	17	108	1	1
Illinois.....	3	0	419	465	1	52	4	2
Michigan.....	2	0	489	463	3	26	13	5
Wisconsin.....	0	0	92	143	0	7	3	2
<b>West North Central States:</b>								
Minnesota.....	0	0	120	97	1	6	0	2
Iowa.....	1	0	44	167	24	62	1	1
Missouri.....	0	0	83	328	12	45	1	2
North Dakota.....	0	0	45	41	3	2	1	1
South Dakota.....	0	0	15	9	9	36	1	1
Nebraska.....	0	1	21	51	8	44	0	1
Kansas.....	0	0	50	80	5	118	0	3
<b>South Atlantic States:</b>								
Delaware.....	0	0	12	30	0	0	1	0
Maryland <sup>4</sup> .....	0	0	113	97	0	0	4	1
District of Columbia.....	0	0	27	14	0	0	0	1
Virginia.....	1	—	—	—	—	—	—	—
West Virginia.....	0	0	51	27	0	15	3	2
North Carolina.....	2	0	29	65	5	2	3	2
South Carolina.....	0	1	6	22	0	5	3	0
Georgia <sup>1</sup> .....	0	0	14	72	0	0	4	0
Florida <sup>2</sup> .....	1	0	14	10	0	0	13	3
<b>East South Central States:</b>								
Kentucky.....	2	0	56	104	7	8	13	0
Tennessee.....	1	0	50	45	8	6	11	2
Alabama <sup>3</sup> .....	1	3	16	35	5	12	5	16
Mississippi.....	0	0	14	24	37	9	7	4

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Feb. 20, 1932, 21 cases; 5 cases in Georgia, 1 case in Florida, 1 case in Alabama, and 14 cases in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.



*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 20, 1932, and February 21, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931	Week ended Feb. 20, 1932	Week ended Feb. 21, 1931
<b>West South Central States:</b>								
Arkansas.....	0	1	10	24	37	18	0	6
Louisiana.....	1	2	19	26	3	21	28	8
Oklahoma.....	0	1	10	26	1	79	1	2
Texas.....	0	0	44	18	26	28	4	4
<b>Mountain States:</b>								
Montana.....	0	0	54	62	2	6	1	1
Idaho.....	0	0	2	11	4	0	0	4
Wyoming.....	1	0	3	22	0	4	0	0
Colorado.....	1	0	40	43	2	6	1	2
New Mexico.....	0	0	8	9	1	7	0	1
Arizona.....	0	0	11	4	0	2	0	0
Utah.....	0	0	5	21	0	0	0	0
<b>Pacific States:</b>								
Washington.....	0	0	37	57	15	22	0	4
Oregon.....	0	2	25	20	16	20	1	0
California.....	3	6	132	122	17	68	6	10

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Feb. 20, 1932, 21 cases, 5 cases in Georgia, 1 case in Florida, 1 case in Alabama, and 14 cases in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influa- enza	Ma- ria	Meas- les	Pellag- ra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>January, 1932</i>										
Florida.....		67	13	23	36	7	1	19	2	24
Idaho.....	4	18	36		11		0	66	35	2
Indiana.....	61	361	172		555		6	575	84	20
Maine.....	4	25	710		2,805		5	172	0	8
Maryland.....	5	176	137		69		1	440	0	24
Massachusetts.....	4	259	104		1,603		6	2,027	40	10
Minnesota.....	4	84	8		180		3	443	22	7
New Jersey.....	10	147	69		381		3	893	0	15
Ohio.....	6	454	145	2	1,833		4	1,976	150	38
Porto Rico.....		54	115	5,105	97	1	2		0	5

<i>January, 1932</i>		Cases	Dysentery—Continued.	Cases
<b>Chicken pox:</b>			Massachusetts.....	3
Florida.....	16		Minnesota (amebic).....	2
Idaho.....	60		New Jersey.....	1
Indiana.....	739		Porto Rico.....	31
Maine.....	261		<b>Filariasis:</b>	
Maryland.....	478		Porto Rico.....	34
Massachusetts.....	1,269		<b>Food poisoning:</b>	
Minnesota.....	444		Ohio.....	1
New Jersey.....	1,256		<b>German measles:</b>	
Ohio.....	1,708		Maine.....	01
Porto Rico.....	16		Maryland.....	14
<b>Conjunctivitis.</b>			Massachusetts.....	58
Maine.....	3		New Jersey.....	13
<b>Diarrhea:</b>			Ohio.....	15
Maryland.....	14		<b>Impetigo contagiosa:</b>	
<b>Diarrhea and enteritis:</b>			Maryland.....	32
Ohio (under two years).....	22		<b>Lead poisoning:</b>	
<b>Dysentery:</b>			Massachusetts.....	3
Florida.....	1		New Jersey.....	1
Maryland.....	2		Ohio.....	14

Lethargic encephalitis:	Cases	Tetanus, infantile:	Cases
Maryland.....	3	Porto Rico.....	11
Massachusetts.....	2	Trachoma:	
New Jersey.....	5	Massachusetts.....	5
Ohio.....	3	New Jersey.....	5
Mumps:		Ohio.....	5
Florida.....	26	Porto Rico.....	8
Idaho.....	42	Trench mouth:	
Indiana.....	341	Indiana.....	1
Maine.....	60	Trichinosis:	
Maryland.....	315	Maryland.....	1
Massachusetts.....	1,314	Ohio.....	11
New Jersey.....	341	Tularaemia:	
Ohio.....	1,114	Indiana.....	9
Porto Rico.....	26	Maryland.....	6
Ophthalmia neonatorum:		Ohio.....	18
Maryland.....	2	Typhus fever	
Massachusetts.....	129	Maryland.....	2
Ohio.....	74	Undulant fever	
Porto Rico.....	7	Indiana.....	1
Paratyphoid fever.		Maryland.....	7
Maine.....	1	Minnesota.....	2
Ohio.....	2	New Jersey.....	4
Porto Rico.....	1	Ohio.....	7
Puerperal septicemia:		Vincent's angina:	
Ohio.....	7	Maine.....	3
Porto Rico.....	6	Maryland.....	23
Rabies in animals:		Whooping cough.	
Maryland.....	2	Florida.....	27
Rabies in man		Idaho.....	14
New Jersey.....	1	Indiana.....	335
Scabies:		Maine.....	130
Maryland.....	5	Maryland.....	789
Septic sore throat.		Massachusetts.....	910
Maryland.....	7	Minnesota.....	111
Massachusetts.....	27	New Jersey.....	1,214
Ohio.....	135	Ohio.....	2,250
Tetanus		Porto Rico.....	195
Maryland.....	3	Yaws	
Massachusetts.....	1	Porto Rico.....	2
New Jersey.....	1		
Porto Rico.....	9		

### RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of January, 1932, by departments of health of States named to other State health departments*

Disease	California	Illinois	Massachusetts	Minnesota	New York
Diphtheria.....			1		1
Measles.....					1
Pollomyelitis.....				1	1
Scarlet fever.....			1		
Trachoma.....					1
Tuberculosis.....	3	1		12	
Undulant fever.....				1	

### INFLUENZA—JANUARY 17 TO FEBRUARY 20, 1932

In the table following are presented the case rates per 100,000 population, annual basis, by geographic groups, of the weekly reports of influenza cases for the five weeks ended February 20, 1932, compared with similar rates for the week ended February 21, 1931. The rates are calculated, in groups, on the reported cases and estimated populations of the following groups of States: New England—Maine, Massachusetts, and Connecticut; Middle Atlantic—New Jersey and

New York City; East North Central—Ohio, Indiana, Illinois, Michigan, and Wisconsin; West North Central—Minnesota, Missouri, South Dakota, Nebraska, and Kansas; South Atlantic—Delaware, Maryland, District of Columbia, West Virginia, North Carolina, South Carolina, Georgia, and Florida; East South Central—Kentucky, Tennessee, and Alabama; West South Central—Arkansas, Louisiana, Oklahoma (exclusive of Oklahoma City and Tulsa), and Texas; Mountain—Montana, Idaho, Wyoming, New Mexico, and Arizona; Pacific—Oregon and California. Complete figures are not available for the States which are omitted from the table.

*Influenza case rates per 100,000 population*

	Week ended—					
	Jan. 23, 1932	Jan. 30, 1932	Feb. 6, 1932	Feb. 13, 1932	Feb. 20, 1932	Feb. 27, 1932
35 States.....	104	138	263	306	345	604
New England States.....	168	356	71	41	61	264
Middle Atlantic States.....	18	25	53	54	98	141
East North Central States.....	21	40	39	95	136	176
West North Central States.....	6	36	53	154	274	166
South Atlantic States.....	261	272	246	327	335	2,795
East South Central States.....	90	98	247	469	319	324
West South Central States.....	64	97	239	431	506	302
Mountain States.....	757	759	5,271	3,651	4,509	48
Pacific States.....	230	261	342	523	422	412

<sup>1</sup> Estimated.

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,377,000. The estimated population of the 89 cities reporting deaths is more than 31,818,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended February 13, 1932, and February 14, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1,360	1,111	
96 cities.....	506	411	804
Measles:			
46 States.....	9,515	11,386	
96 cities.....	2,761	3,337	
Meningococcus meningitis:			
46 States.....	69	142	
96 cities.....	34	75	
Poliomyelitis:			
46 States.....	32	30	
Scarlet fever:			
46 States.....	5,774	5,843	
96 cities.....	2,496	2,230	1,557
Smallpox:			
46 States.....	362	937	
96 cities.....	26	116	52
Typhoid fever:			
46 States.....	210	122	
96 cities.....	40	19	27
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	923	1,685	
Smallpox:			
89 cities.....	0	0	

## City reports for week ended February 13, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	3	0	1		0	226	1	4
New Hampshire:								
Concord	0	0	1		0	0	0	1
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre		0						
Burlington	0	1	0		0	16	1	0
Massachusetts:								
Boston	62	29	12	2	2	20	19	28
Fall River	4	4	2	1	1	10	1	0
Springfield	13	4	0		0	7	7	0
Worcester	2	4	6		0	3	38	2
Rhode Island:								
Pawtucket	0	1	0		0	0	0	0
Providence	22	8	4		0	569	6	5
Connecticut:								
Bridgeport	4	5	0	2	2	0	0	3
Hartford	4	5	1		0	2	18	3
New Haven	16	1	0	2	2	1	10	3
MIDDLE ATLANTIC								
New York:								
Buffalo	42	11	7		1	20	3	12
New York	231	186	124	81	17	44	117	165
Rochester	3	5	4	1	0	196	18	5
Syracuse	15	2	0		0	95	16	3
New Jersey:								
Camden	9	6	4		1	2	0	3
Newark	55	13	7	7	2	4	42	6
Trenton	7	3	0	1	1	2	6	3
Pennsylvania:								
Philadelphia	140	64	14	5	5	5	44	42
Pittsburgh	58	19	0	6	2	203	48	36
Reading	21	2	0		0	0	3	6
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	4	7	4	1	1	0	0	13
Cleveland	109	33	15	21	2	247	101	19
Columbus	8	2	9	5	5	0	0	10
Toledo	26	4	1	4	1	13	0	8
Indiana:								
Fort Wayne	3	3	5		1	1	0	1
Indianapolis	35	7	2		0	3	86	10
South Bend	5	1	0		2	0	0	0
Terre Haute	11	1	0		0	0	0	4
Illinois:								
Chicago	89	93	57	50	12	126	11	74
Springfield	3	1	1	1	0	0	8	2
Michigan:								
Detroit	99	44	26	9	1	24	29	31
Flint	12	2	1	1	0	25	41	7
Grand Rapids	9	0	0		1	66	11	1
Wisconsin:								
Kenosha	8	1	0		0	0	0	0
Madison	4	0	1		0	1	1	1
Milwaukee	61	14	4	1	0	105	32	9
Racine	20	1	0		0	13	78	0
Superior	0	0	0		0	1	44	0

## City reports for week ended February 18, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	7	0	0	-----	0	0	0	4
Minneapolis.....	18	14	4	-----	5	4	25	20
St. Paul.....	15	4	0	-----	2	0	2	7
Iowa:								
Davenport.....	1	0	0	-----	-----	0	3	-----
Des Moines.....	0	1	1	-----	-----	0	0	-----
Sioux City.....	3	0	4	-----	-----	0	0	-----
Waterloo.....	8	0	0	-----	-----	2	0	-----
Missouri:								
Kansas City.....	21	5	1	-----	0	5	1	11
St. Joseph.....	12	1	6	-----	0	0	1	2
St. Louis.....	33	33	23	-----	2	1	2	10
North Dakota:								
Fargo.....	1	0	0	-----	0	38	1	0
Grand Forks.....	0	1	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	4	0	0	-----	-----	46	0	-----
Nebraska:								
Omaha.....	8	6	6	-----	0	0	3	23
Kansas:								
Topeka.....	22	1	2	-----	0	0	2	1
Wichita.....	36	2	1	-----	0	46	0	6
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	2	2	0	-----	0	0	3	2
Maryland:								
Baltimore.....	174	22	8	-----	5	2	113	26
Cumberland.....	1	0	0	-----	0	0	0	1
Frederick.....	0	0	2	-----	0	0	0	0
District of Columbia:								
Washington.....	33	17	6	-----	3	2	5	26
Virginia:								
Lynchburg.....	3	1	2	-----	0	0	0	2
Norfolk.....	2	1	1	-----	0	0	0	1
Richmond.....	6	4	4	-----	3	0	0	5
Roanoke.....	2	1	2	-----	0	0	0	0
West Virginia:								
Charleston.....	13	0	0	-----	0	62	0	1
Huntington.....	1	-----	0	-----	0	2	0	0
Wheeling.....	2	1	0	-----	0	0	0	5
North Carolina:								
Raleigh.....	0	0	0	-----	0	34	0	0
Wilmington.....	0	0	0	-----	0	0	0	0
Winston-Salem.....	8	1	0	-----	0	1	4	6
South Carolina:								
Charleston.....	0	0	0	-----	44	0	0	0
Columbia.....	4	1	0	-----	0	0	0	1
Georgia:								
Atlanta.....	1	3	5	-----	12	2	1	12
Brunswick.....	0	0	0	-----	0	0	0	0
Savannah.....	2	1	1	-----	12	0	0	2
Florida:								
Miami.....	0	2	3	-----	0	1	0	0
Tampa.....	2	1	0	-----	0	0	0	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	0	-----	0	0	0	3
Lexington.....	0	-----	3	-----	2	0	5	2
Tennessee:								
Memphis.....	5	3	5	-----	2	3	0	10
Nashville.....	1	1	4	-----	0	0	0	6
Alabama:								
Birmingham.....	1	3	1	-----	2	0	2	9
Mobile.....	0	1	4	-----	0	0	1	1
Montgomery.....	3	1	1	-----	-----	0	8	-----

## City reports for week ended February 13, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	2	1	0		0	0	0	0
Little Rock.....	0	0	1		1	0	29	4
Louisiana:								
New Orleans.....	1	15	19	2	3	0	0	12
Shreveport.....	5	0	1		0	50	3	2
Oklahoma: Muskogee.....	0		2	7		0	4	
Texas:								
Dallas.....	4	0	5	7	4	43	0	8
Fort Worth.....	16	5	2		0	0	0	4
Galveston.....	0	1	0		0	0	0	2
Houston.....	2	7	22		0	4	0	6
San Antonio.....	0	4	3		5	0	0	2
MOUNTAIN								
Montana:								
Billings.....	6	0	0		0	0	0	0
Great Falls.....	1	1	0		0	1	0	0
Helena.....	0	0	0		0	14	0	0
Missoula.....	0	0	1		0	0	0	0
Idaho: Boise.....	0	0	1		0	0	1	3
Colorado:								
Denver.....	9	8	9		4	8	16	13
Pueblo.....	21	1	1		0	0	0	1
New Mexico: Albuquerque.....	5	0	2		0	1	1	2
Arizona: Phoenix.....	0		1		0	1	0	3
Utah: Salt Lake City.....	16	2	0		3	0	0	2
Nevada: Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	31	4	1			375	3	
Spokane.....	27	1	0			10	0	
Tacoma.....	0	1	0		0	10	3	2
Oregon:								
Portland.....	19	6	1	11	1	6	5	5
Salem.....	0	0	0	28		0	0	
California:								
Los Angeles.....	161	34	27	177	1	2	7	30
Sacramento.....	33	1	3		1	0	3	15
San Francisco.....		13						



## City reports for week ended February 13, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-ported	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, esti- mated expec- tancy	Cases re- ported	Cases, esti- mated expec- tancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expec- tancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	10	1	0	0	0	0	0	0	0	3	24
Minneapolis.....	42	70	0	0	0	0	0	4	0	9	113
St. Paul.....	28	16	0	0	0	3	1	0	0	10	66
Iowa:											
Davenport.....	1	9	2	0				0	0		
Des Moines.....	7	10	2	1				0	0		47
Sioux City.....	2	5	0	5				0	0		2
Waterloo.....	2	0	0	0				0	0		1
Missouri:											
Kansas City.....	21	11	0	0	0	9	1	0	0	133	108
St. Joseph.....	3	4	9	0	0	2	0	0	0	0	34
St. Louis.....	48	22	2	1	0	4	0	1	0	96	192
North Dakota:											
Fargo.....	3	2	0	0	0	0	0	0	0	2	5
Grand Forks.....	1	1	1	0				0	0		
South Dakota:											
Aberdeen.....	0	1	0	0				0	0		
Nebraska:											
Omaha.....	7	8	2	0	0	2	0	0	0	2	85
Kansas:											
Topeka.....	2	1	0	0	0	0	0	0	0	24	15
Wichita.....	5	4	0	0	0	3	0	0	0	5	36
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	9	0	0	0	0	0	0	0	7	24
Maryland:											
Baltimore.....	38	58	0	0	0	10	1	0	0	128	205
Cumberland.....	1	0	0	0	0	0	0	0	0	2	6
Frederick.....	2	2	0	0	0	0	0	1	0	1	5
District of Col.:											
Washington.....	26	23	0	0	0	11	0	1	0	12	173
Virginia:											
Lynchburg.....	1	4	0	0	0	0	0	0	0	9	13
Norfolk.....	2	5	0	0	0	2	0	3	0	1	
Richmond.....	4	10	0	0	0	6	0	0	0	0	61
Roanoke.....	2	3	0	0	0	1	0	0	0	3	14
West Virginia:											
Charleston.....	1	2	0	0	0	1	0	0	0	7	11
Huntington.....		1		0	0	0		1	0	0	0
Wheeling.....	2	1	0	0	0	0	0	0	0	11	22
North Carolina:											
Raleigh.....	1	0	0	0	0	1	0	0	0	3	7
Wilmington.....	0	0	0	0	0	0	0	0	0	18	0
Winston.....											
Salem.....	2	1	1	0	0	2	0	0	0	38	18
South Carolina:											
Charleston.....	1	1	0	0	0	1	0	0	0	0	18
Columbia.....	0	1	0	0	0	1	0	0	0	0	9
Georgia:											
Atlanta.....	8	6	1	0	0	4	0	4	1	0	69
Brunswick.....	0	0	0	0	0	0	0	0	0	0	1
Savannah.....	0	0	0	0	0	1	0	1	0	2	35
Florida:											
Miami.....	1	0	0	0	0	2	0	0	0	0	29
Tampa.....	2	1	0	0	0	0	1	1	0	0	22
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	3	0	0	0	0	0	0	0	0	0	27
Lexington.....		2		0	0	2				8	12
Tennessee:											
Memphis.....	10	14	2	1	0	4	1	1	1	17	105
Nashville.....	2	1	0	0	0	3	0	0	0	5	32
Alabama:											
Birmingham.....	3	3	1	0	0	4	0	6	0	3	66
Mobile.....	1	3	0	0	0	1	0	3	1	0	24
Montgomery.....	0	1	0	0	0		0	0		1	



## City reports for week ended February 13, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CEN- TRAL											
Arkansas:											
Fort Smith.....	1	0	0	3	0	0	0	0	0	0	
Little Rock.....	2	0	0	0	0	2	0	0	0	2	7
Louisiana:											
New Orleans....	8	2	0	0	0	12	2	1	2	0	140
Shreveport.....	1	0	1	2	0	4	0	0	2	8	34
Oklahoma:											
Muskogee.....		2		0				0		3	
Texas:											
Dallas.....	6	9	2	0	0	1	1	0	0	4	61
Fort Worth.....	5	9	1	0	0	3	1	0	1	0	28
Galveston.....	1	1	0	0	0	1	0	0	0	0	11
Houston.....	2	3	6	1	0	3	0	0	0	0	70
San Antonio....	1	0	0	0	0	6	0	0	0	0	54
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	8
Great Falls.....	4	2	1	0	0	0	0	0	0	0	10
Helena.....	0	0	0	0	0	0	0	0	0	0	7
Missoula.....	1	2	1	0	0	0	0	0	0	0	6
Idaho:											
Boise.....	1	1	1	2	0	1	0	0	0	0	10
Colorado:											
Denver.....	15	12	0	0	0	9	0	0	0	6	88
Pueblo.....	1	0	0	0	0	1	0	0	0	1	13
New Mexico:											
Albuquerque....	0	1	0	0	0	6	0	0	0	0	12
Arizona:											
Phoenix.....	0	0	0	0	0	6	0	0	0	0	
Utah:											
Salt Lake City..	4	3	0	0	0	1	0	0	0	1	31
Nevada:											
Reno.....	1	0	0	0	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle.....	12	1	3	4			0	0		18	
Spokane.....	8	2	6	0			0	0		0	
Tacoma.....	2	2	3	0	0	0	0	0	0	0	28
Oregon:											
Portland.....	6	1	12	5	0	3	0	0	0	4	72
Salem.....	1	0		0				0		0	
California:											
Los Angeles....	46	39	4	4	0	28	3	5	0	16	293
Sacramento....	3	4	1	0	0	5	0	0	0	1	50
San Francisco..	25		1				1				

## City reports for week ended February 13, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Connecticut:									
Bridgeport.....	0	0	2	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	7	2	2	1	0	0	1	0	0
Rochester.....	0	0	0	0	0	0	0	1	0
Pennsylvania:									
Pittsburgh.....	2	3	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	1	1	0	0	0	0	0	0	0
Cleveland.....	1	1	0	0	0	1	0	0	0
Indiana:									
Indianapolis.....	3	3	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	5	0	0	0	0	0	1	1
Michigan:									
Flint.....	0	0	0	1	0	0	0	0	0
Wisconsin:									
Kenosha.....	1	1	0	0	0	0	0	0	0
Racine.....	0	0	0	1	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Iowa:									
Waterloo.....	1		0		0		0	0	
Nebraska:									
Omaha.....	2	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
District of Columbia:									
Washington.....	1	0	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Columbia.....	2	0	0	0	0	0	0	0	0
Georgia:									
Atlanta.....	1	1	0	0	2	2	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	2	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	1	0	0	0	1	0	0	0
Alabama:									
Birmingham.....	0	1	0	0	0	0	0	0	0
Mobile.....	1	1	0	0	0	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	1	1	0	0	0
Texas: <sup>1</sup>									
Fort Worth.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	0	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City.....	2	2	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	0		0		0		0	1	
California:									
Los Angeles.....	2	2	0	0	0	0	1	0	0

<sup>1</sup> Typhus fever: 7 cases; 1 case in New York, N. Y., 5 cases in Savannah, Ga., and 1 case in Houston, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended February 13, 1932, compared with those for a like period ended February 14, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, January 10 to February 13, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931
98 cities.....	88	74	97	79	84	88	79	78	79	67
New England.....	86	91	50	106	96	106	48	84	65	75
Middle Atlantic.....	82	56	82	67	69	65	73	53	75	53
East North Central.....	68	95	97	93	68	110	79	90	74	85
West North Central.....	106	82	102	84	99	109	81	99	89	55
South Atlantic.....	94	69	108	65	120	73	94	75	59	59
East South Central.....	81	70	87	70	116	70	94	53	87	53
West South Central.....	195	106	260	81	204	183	152	156	168	118
Mountain.....	43	52	86	35	43	70	60	78	103	78
Pacific.....	97	47	99	89	63	45	72	69	78	49

## MEASLES CASE RATES

	278	324	346	405	334	418	448	473	433	521
98 cities.....	278	324	346	405	334	418	448	473	433	521
New England.....	1,905	310	2,064	522	1,922	438	2,322	502	2,019	534
Middle Atlantic.....	116	158	154	251	149	306	228	353	253	398
East North Central.....	182	87	215	80	210	142	321	151	394	183
West North Central.....	78	1,829	150	1,984	114	1,521	172	1,489	182	1,311
South Atlantic.....	71	500	110	806	71	1,031	196	1,291	245	1,820
East South Central.....	6	1,004	17	705	23	916	0	1,031	17	904
West South Central.....	73	7	162	10	115	17	188	3	320	17
Mountain.....	517	374	509	757	509	496	284	1,123	198	187
Pacific.....	544	55	828	73	938	110	1,138	112	906	169

## SCARLET FEVER CASE RATES

	315	316	300	334	336	337	349	320	391	348
98 cities.....	315	316	300	334	336	337	349	320	391	348
New England.....	582	539	640	575	611	519	705	534	634	683
Middle Atlantic.....	380	282	361	314	416	328	447	304	546	322
East North Central.....	335	398	312	384	388	377	325	331	385	375
West North Central.....	220	321	180	323	212	396	284	480	235	474
South Atlantic.....	239	305	218	343	214	313	245	306	239	320
East South Central.....	121	470	116	487	127	517	143	423	127	382
West South Central.....	99	129	82	142	92	112	106	88	49	105
Mountain.....	260	331	259	357	207	322	250	261	172	400
Pacific.....	129	73	128	120	89	143	116	145	120	123

## SMALLPOX CASE RATES

	4	16	6	16	5	17	2	23	4	18
98 cities.....	4	16	6	16	5	17	2	23	4	18
New England.....	2	0	7	0	14	0	2	0	2	0
Middle Atlantic.....	0	0	0	0	0	0	0	2	0	0
East North Central.....	1	19	3	21	2	25	0	12	1	10
West North Central.....	17	98	13	77	11	84	9	151	11	84
South Atlantic.....	0	0	0	4	0	0	2	0	0	0
East South Central.....	12	18	23	29	6	18	0	29	6	12
West South Central.....	16	27	0	34	16	51	13	81	20	132
Mountain.....	9	78	34	9	9	0	0	44	17	0
Pacific.....	8	29	27	20	13	18	4	24	20	29

See footnotes at end of table

*Summary of weekly reports from cities, January 10 to February 13, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Jan 16, 1932	Jan. 17, 1931	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931
98 cities.....	5	5	7	6	5	5	5	4	6	8
New England.....	0	0	2	2	2	5	2	2	2	2
Middle Atlantic.....	4	2	4	3	7	2	4	1	3	2
East North Central.....	2	2	3	3	1	1	4	2	2	1
West North Central.....	2	4	4	10	6	13	2	2	9	2
South Atlantic.....	18	10	29	14	16	18	4	18	16	0
East South Central.....	29	53	12	12	17	18	31	6	58	20
West South Central.....	10	14	23	27	3	14	23	24	3	14
Mountain.....	9	0	0	17	0	0	0	0	0	0
Pacific.....	0	2	11	6	2	10	4	0	13	10

## INFLUENZA DEATH RATES

91 cities.....	14	36	12	52	13	70	13	61	18	59
New England.....	19	10	7	12	5	34	10	46	17	46
Middle Atlantic.....	12	59	8	91	9	102	8	68	13	49
East North Central.....	5	9	10	18	11	36	12	52	15	56
West North Central.....	3	14	6	20	3	29	12	35	26	56
South Atlantic.....	12	42	24	38	14	127	16	129	18	119
East South Central.....	44	64	44	64	50	76	41	64	44	64
West South Central.....	30	79	13	83	37	100	30	73	44	159
Mountain.....	103	35	26	44	52	52	52	52	60	17
Pacific.....	26	10	14	22	9	14	12	12	7	14

## PNEUMONIA DEATH RATES

91 cities.....	125	219	120	229	109	259	119	231	134	218
New England.....	103	159	113	178	113	185	144	286	118	291
Middle Atlantic.....	133	311	126	332	111	369	103	293	124	254
East North Central.....	82	124	79	126	96	176	96	175	108	182
West North Central.....	119	212	154	171	113	159	160	136	244	124
South Atlantic.....	208	237	186	281	114	345	165	325	174	348
East South Central.....	132	229	107	299	125	229	157	178	182	166
West South Central.....	148	228	165	245	125	204	172	214	121	178
Mountain.....	181	270	147	157	138	200	215	209	172	183
Pacific.....	158	118	123	103	116	115	100	72	154	72

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Fort Wayne, Ind., not included.

<sup>3</sup> Columbia, S. C., not included.

<sup>4</sup> Trenton, N. J., and Covington, Ky., not included.

<sup>5</sup> Barre, Vt., and San Francisco, Calif., not included.

<sup>6</sup> Barre, Vt., not included.

<sup>7</sup> Trenton, N. J., not included.

<sup>8</sup> Covington, Ky., not included.

<sup>9</sup> San Francisco, Calif., not included.

## FOREIGN AND INSULAR

### AUSTRALIA

*Poliomyelitis*.—According to a report dated January 21, 1932, there was a considerable increase in the number of cases of poliomyelitis reported in the States of New South Wales, and Queensland, Australia, during the last two months of 1931. Measures were being taken to limit the spread of the disease and to insure adequate treatment of the cases which occur.

The following table shows the number of cases of poliomyelitis which occurred in certain States of Australia and in Tasmania during 1931 and from January 1 to 18, 1932.

	New South Wales	Victoria	Queens- land	South Australia	Tasmania
1931					
January.....	3	21		9	2
February.....	2	24		13	1
March.....		36		4	
April.....	1	60		3	2
May.....	4	76		3	3
June.....	3	21		1	1
July.....		16			
August.....	2	8	1	2	
September.....	2	1			
October.....	3	3		1	
November.....	13	2	1		
December.....	54	1	58		
1932					
January 1 to 18.....	63	1	29		1

### CANADA

*Provinces—Communicable diseases—Week ended February 6, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended February 6, 1932, as follows:

Province	Cerebro- spinal fever	Influenza	Poliomye- litis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup> .....					
Nova Scotia.....	1	71			
New Brunswick <sup>1</sup> .....					
Quebec.....			1		10
Ontario.....	1	27	1	1	10
Manitoba.....			1	5	
Saskatchewan.....			1	7	
Alberta.....					3
British Columbia.....				5	1
Total.....	2	98	4	18	24

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended February 6, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended February 6, 1932, as follows:

Disease	Cases	Diseases	Cases
Chicken pox	95	Poliomyelitis	1
Diphtheria	20	Puerperal septicemia	1
Erysipelas	8	Scarlet fever	80
German measles	1	Tuberculosis	59
Measles	285	Typhoid fever	10
Ophthalmia neonatorum	1	Whooping cough	51

### ITALY

*Communicable diseases—Four weeks ended July 26, 1931.*—During the four weeks ended July 26, 1931, certain communicable diseases were reported in Italy as follows:

Disease	June 29-July 5		July 6-12		July 13-19		July 20-26	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax	33	28	35	31	51	41	42	34
Cerebrospinal meningitis	9	9	10	9	11	8	7	6
Chicken pox	152	82	90	71	78	56	55	35
Diphtheria and croup	257	162	238	159	277	172	270	178
Dysentery	24	13	53	22	90	31	84	35
Lethargic encephalitis	1	1	2	2	1	1	3	3
Measles	1,184	260	1,054	208	1,003	209	652	163
Poliomyelitis	8	8	25	13	17	14	25	20
Scarlet fever	323	116	244	97	253	104	321	111
Typhoid fever	586	298	595	307	816	401	886	415

### MEXICO

*Tampico—Communicable diseases—January, 1932.*—During the month of January, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	3	1	Tuberculosis		18
Enteritis, various	31	36	Typhoid fever		2
Influenza	17	4	Typhus fever		1
Malaria	461	20	Whooping cough	18	
Measles	1				

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER**

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the Legatus of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## **CHOLERA**

[C indicates cases; D, deaths; P, present]

Place	Week ended—											
	July			Sept.			November,			January, 1932		
	26-28, 1931	29-31, 1931	Aug. 22, 1931	17-19, Oct. 1, 1931	20-22, Oct. 1, 1931	23-25, Oct. 1, 1931	21-23, Nov. 1, 1931	24-26, Nov. 1, 1931	27-29, Nov. 1, 1931	2-4, Dec. 1, 1931	5-7, Dec. 1, 1931	8-10, Dec. 1, 1931
Ceylon Colombo.....	C	3					1	1	1			
China.....	D	3					1	1	1			
Canton.....	C											
Hankow.....	C		2				5	3				
Shanghai.....	C			8	23	6	4	1		2		
Tientsin.....	C		125	88	8			1		1		
Gowatow.....	C		9	13	4							
India.....	C	36,514	30,223	26,705	15,722	8,451	3,302	3,677	3,884			
Bombay.....	D	20,276	21,983	13,275	8,801	1,713	1,936	2,074				
Calcutta.....	C	44	42	4	5	1	3					
Chittagong.....	C	25	17	3	1	1	4	1				
Madras.....	C	110	46	51	74	22	19	11	22	18	26	41
Negapatam.....	C	30	15	23	37	10	11	6	15	6	13	23
Rangoon.....	C	6	5	1						5	1	
India (French):	C											
Chander-nagor.....	D	1	1	1	1					1		
Karikal.....	C	1	1	1	1					1		
Pondicherry.....	D	2	2	2	2							
India (Portuguese).....	D	2	2	2	2							







## PLAGUE

Place	July 26- Aug. 22, 1931	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Week ended—											
					November, 1931			December, 1931			January, 1932			February, 1932		
					21	23		5	12	19	26	2	9	16	23	30
Algeria:																
Algiers.....	2															
Philippeville.....	2															
Argentina: Cordoba Province <sup>1</sup> .....	1										1					
Azores:																
San Miguel Island.....					2	3										
						1										
					9	2										
					4											
Terceira Island.....													1			
Belgian Congo.....																
British East Africa (see also table below):																
Tanganyika.....	8	4	13													
	2	4	6													
Uganda.....	285	289	276	218	41	38		31	35	28	13	9	13			
	281	207	270	211	39	35		30	34	24	15	10	13			
Canary Islands: Palma Island—Los Llanos.....														8	3	
														1	2	
Ceylon: Colombo.....	6	3	4			1						4	4	1	1	
	6	3	3			1						4	1	1		
Plague-infected rats.....	8															
Chile:																
Santiago.....				1												
				1												
Plague-infected rats.....				1												
Valparaiso.....		1														
China:																
Shansi Province <sup>1</sup> .....				P												
Shensi Province.....				P												
Dutch East Indies:																
Batavia and West Java.....	58	65	113	139	44	39		40	75	64	54	39	46			
	58	65	113	139	44	39		40	75	64	54	39	46			
	505	233	325	512	152	171		167	212	179	151					
Java and Madura.....																
Java—Tegal.....																P

<sup>1</sup> 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.  
<sup>2</sup> On July 27, 1931, 1,250 cases of plague were reported in Chiohe and Changchow, China, since April. On Sept. 19, 1931, 18 deaths were reported in Changchuanpu and new cases in Kaifeng and Fengtien.  
<sup>3</sup> On Oct. 17, 1931, plague epidemic was reported in western Shansi Province, China, with 2,000 deaths at Hsinghsien.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

[illegible]



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

(C indicates cases; D, deaths; P, present)

Place	July, 1931	Aug- ust, 1931	Sept- em- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Place	July, 1931	Aug- ust, 1931	Sept- em- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932
British East Africa (see also table above) <sup>1</sup> Kenya.....	484	235	14	64	44	41	5	Peru—Continued.							
Ecuador.....								Chepén—Pacasmayo.....							
Alamor Parish—Los Hoyos.....								Eten—Chiclayo.....							
Analauza Parish—Gangochapa.....								Huancabamba—Ayacucho.....							
Calvas Canton—Cariamanga.....								Huaura—Chancay.....							
Overfria.....								Plague-infected rats							
Celidica Canton—Choras.....								La Samana—Hualgayoc.....							
Chimborazo Province—Akkusi.....								Lima—Lima.....							
Guamote.....								Lima—Lima (bactendras).....							
Loja Canton—Lapaz.....								Pajasan—Trujillo.....							
Nalmuro.....								Palulo—Hualgayoc.....							
Pasterillo.....								Pativillos—Chancay.....							
Tuburo.....								Quispampa—Huancabamba.....							
Pallas Canton—San Antonio.....								San Pedro—Pacasmayo.....							
Indo-China.....								Supé—Chancay.....							
Madagascar (see also table above)								Senegal.....							
Ambohitra Province.....								Baol.....							
Antsirabe Province.....								Dakar.....							
Maevatanana Province.....								Diourbel.....							
Miarinarivo Province.....								Louga.....							
Moramanga Province.....								Rufisque.....							
Tananarive Province.....								Thies.....							
Peru.....								Tivisouane.....							
Barranca—Chancay.....															
Calico—Plague-infected rats.....															

<sup>1</sup> Reports incomplete.



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

[illegible]

Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	December, 1931
Waterford County—Lismore.....							
Lithuania (see table below).							
Mexico:							
Chihuahua.....							
Mexico City, including municipalities in Federal District.....							
San Luis Potosi.....							
Torrion.....							
Morocco.....							
Palestine.....							
Paraguay: Asuncion.....							
Peru.....							
Poland.....							
Portugal: Oporto.....							
Rumania.....							
Tunisia: Tunis.....							
Turkey (see table below)							
Union of South Africa:							
Cape Province.....							
Municipality of East London.....							
Natal.....							
Orange Free State.....							
Transvaal.....							
Venezuela: Caracas (see table below)							
Yugoslavia (see table below)							
On vessel: At Antofagasta, from Iquique and points north							
Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	December, 1931
Chosen: Seoul.....	6	1	33	12	24	4	1
.....	2	1	5	1	18	1	1
Czechoslovakia.....	9	2	13	9	12	4	1
Greece.....	33	34	3	1	1	1	1
Guatemala.....	15	5					

<sup>1</sup> Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal regions.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## YELLOW FEVER

[C indicates cases; D, deaths; P, present!]

[illegible]





UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

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## ===== SPECIAL ARTICLE =====

Activities of the National Leper Home, Carville, La.,  
during the Fiscal Year 1931



UNITED STATES  
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# UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

## DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

MARCH 11, 1932

NO. 11

## THE NATIONAL LEPER HOME (UNITED STATES MARINE HOSPITAL), CARVILLE, LA.

Review of the More Important Activities During the Fiscal Year Ended June 30, 1931

By O. E. DENNEY, *Surgeon, United States Public Health Service, Medical Officer in Charge*

### STATISTICAL

An increase has been noted in the annual number of voluntary admissions to the hospital. The apparent hesitancy on the part of many physicians in insisting on segregation of their leper patients by formal public procedure and the gradual dissemination of optimistic information among the laity are leading toward a system of admission of individual patients by persuasion rather than by coercion. There exists a legal right to enforce segregation of lepers; but the individual so segregated is sometimes discontented and non-cooperative and, unless he quickly adapts himself to hospitalization, he may choose to absent himself without permission. It is significant that the number of patients absent without official leave has yearly diminished to a negligible percentage at the present time.

During the fiscal year ended June 30, 1931, 117,608 days of relief were furnished. The average daily population was 322, but the actual population progressively increased until, at the end of the year, a maximum of 337 was reached. Sixty-three new patients were admitted; 3 patients absconded, 1 of whom returned within a month at his own expense; 9 patients who had absconded in previous years returned for hospitalization, 5 of them paying their own expenses; 1 patient was deported as not entitled to hospitalization at the expense of the Government; 1 was discharged after a period of observation, the diagnosis of leprosy not having been confirmed; 23 died; 2 paroled patients returned with leprosy symptoms recurring; and 7 paroled patients were admitted temporarily for surgical or medical assistance required for the relief of symptoms only secondarily related to their former leprosy. Of the 19 patients paroled, all but one left the hospital.

*Nativity of patients in hospital*

Alabama.....	4	Hawaiian Territory..	11	Panama.....	1
Arkansas.....	1	Indiana.....	1	Poland.....	1
Bahama Islands....	2	India.....	2	Pennsylvania.....	1
Bermuda Islands....	2	Italy.....	10	Philippines.....	11
Brazil.....	1	Jamaica.....	2	Porto Rico.....	8
British Guiana.....	3	Japan.....	1	Portugal.....	2
British West Indies..	4	Louisiana.....	98	Rhode Island.....	1
California.....	8	Maryland.....	1	Russia.....	5
Canada.....	2	Mexico.....	41	Society Islands....	1
Cape Verde Islands..	1	Mississippi.....	3	South Carolina....	2
China.....	15	Missouri.....	2	Spain.....	6
Colorado.....	1	Minnesota.....	1	Texas.....	34
Dutch Guiana.....	2	New Jersey.....	1	Virgin Islands.....	1
Finland.....	1	New York.....	2	Virginia.....	1
Florida.....	14	Norway.....	1	West Indies.....	1
France.....	1	North Carolina....	1	Wisconsin.....	2
Georgia.....	4	Ohio.....	2		
Greece.....	12	Palestine.....	1	Total.....	337

*Admissions July 1, 1930-June 30, 1931, by State or country*

Alabama.....	1	Florida.....	3	Philippine Islands...	8
British West Indies..	3	Georgia.....	1	Porto Rico.....	2
British Guiana.....	1	Hawaiian Territory..	2	Poland.....	1
Canada.....	1	Italy.....	2	South Carolina....	2
California.....	3	Louisiana.....	9	Texas.....	10
China.....	1	Mexico.....	8	Virgin Islands.....	1
Colorado.....	1	Norway.....	1		
Dutch Guiana.....	1	Ohio.....	1	Total.....	63

There were 23 deaths during the year, of which number 1 was from tuberculosis (miliary); 2 from hemorrhage (gastric); 10 from nephritis; 4 from pneumonia; 4 from leprosy; 1 from diabetes mellitus; and 1 from myocarditis.

## LEPRA THERAPY

During the year, 251 patients were admitted to the men's infirmary, a number considerably in excess of that for any previous year. This increase is in part due to the increased population. In the women's infirmary, 90 were admitted.

The patients admitted to the 2 infirmaries were discharged to their quarters after an average of 2 weeks, although a number remained as long as 6 months.

Of the 337 patients in the hospital proper on June 30, 1931, 178 were taking chaulmoogra oil by mouth, the dosage varying from 5 to 125 drops three times a day. About one-third of the patients were taking chaulmoogra oil with benzocaine by intramuscular injection twice weekly, the average dose being 5 cubic centimeters.

A survey made of the 180 patients who have been taking chaulmoogra oil-benzocaine intramuscularly shows that of the 49 who have

taken the treatment for 2 years, 33 were markedly improved, 14 were moderately improved, and 2 were slightly improved. Of 131 patients who have taken treatment for over 12 months, 66 showed marked improvement, 50 showed moderate improvement, 8 showed slight improvement, and 7 were unchanged, while 34 of the 2 groups were bacterioscopically negative. Graduations of clinical improvement from slight to marked have been noted in 96 per cent of these cases.

During the year all leper patients were given antityphoid immunization. This gave an opportunity for comparison of reactions in lepers with those of nonleprous persons, since all the personnel on the station were immunized at the same time. Of 300 lepers receiving 3 immunizing doses, 22 per cent gave no local or general symptoms following any injection, and of 253 nonlepers, 20 per cent were likewise negative. These reaction effects on lepers as compared with smallpox vaccination indicate much less sensitiveness to the typhoid.

The experimental use of para-thio cresol as a cell growth stimulant in treatment of leprous ulcers was attended with moderate success only.

Of the small group of patients which had been receiving intramuscular injections of vaccinated calf serum, four have continued faithfully for over two years. While three of these are at present negative bacteriologically and all show clinical improvement, no conclusion of specific effect can be made. In these, the serum finally failed to give local reaction to the intramuscular injection, but when given intradermally marked reaction was noted. Similar retention of skin susceptibility with other serums and vaccines has been mentioned in medical literature.

*Other medical attention.*—In the out-patient clinic, which provides treatment for nonleprous personnel and their families resident on the station, 1,272 patients received attention; relief was furnished to 1,870.

#### DERMATOLOGIC SERVICE

During the fiscal year there has occurred among the patients about the usual number of intercurrent skin diseases. The most interesting of these were fungal infections, some of which closely simulated macular leprosy and were found in patients on admission. In one case of infection by *Tinea versicolor* and another by *Tinea circinata* the patients regarded the lesions of these fungi as part of their leprous manifestations and stated that they had been so informed by the physicians who examined them at the time the diagnosis of leprosy was made. A sufficient amount of material has accumulated to warrant the publication some time in the future of a photographic study of such unusual cases.

Forty-eight patients were treated with the ethyl esters of the hydno-carpus, which has, in a large measure, supplanted treatment with the ethyl esters of chaulmoogra oil. Intramuscular injections of the esters in doses of 2 or 3 cubic centimeters were given once a week. Administered in this way the esters apparently are not as irritating as are those of chaulmoogra oil. Pain or tenderness on pressure and induration and swelling in the muscles have been of very rare occurrence. It has not been necessary to interrupt the weekly injections on account of soreness, and no abscesses have occurred. Beneficial results have not been spectacular, but have about equaled those obtained with the ethyl esters of chaulmoogra oil.

Of the 48 cases, 8 patients received less than 8 injections and should not be regarded as evidence as to the effect of the treatment on leprosy. Of the remaining 40 cases, 27 were of the mixed type, 8 were of the skin type, and 5 were of the nerve type. Thirteen were in the early stages of the disease and 27 presented symptoms of advanced leprosy.

Of the 40 cases, 2 have become bacteriologically negative and have been paroled and 16 have shown improvement in degrees varying from slight to marked. In 11 patients no change was noted in symptoms, 10 cases during treatment appear to have grown worse, and 1 has died.

The 2 cases paroled were of the nerve type. Of the 16 patients showing improvement, 12 were of the mixed type, 3 of the skin type and 1 was of the nerve type. Of the 11 cases in which there was no apparent change, 8 were of the mixed type, 1 was of the skin type, and 2 were of the nerve type. Of the 10 cases in which an aggravation of the symptoms were noted 6 were of the mixed type and 4 of the nerve type.

Of the two paroled cases, one was in the early and the other in the advanced stage of leprosy. Of the 16 cases showing improvement, 6 were in the early stages and 10 in the advanced. Of the 14 cases that remained unchanged, 2 were in the early and 12 in the advanced stage. Of the 7 cases that grew worse, 2 were in the early and 5 in the advanced stage. In the one case in which death occurred, the cause was pneumonia and could not be attributed to the treatment.

It would not appear from the percentages that type or stage of the disease had any important bearing on the results of treatment. The percentage of patients in the early stage of the disease in whom improvement occurred was about 50 per cent and the percentage of patients in the advanced stage in whom improvement occurred was also about 50 per cent. The percentage of those who grew worse was between 20 and 25 per cent whether the patient was in the early or advanced stage. But in those remaining unchanged there was a higher percentage in advanced than in the early stages. It would

seem from these percentages that the ethyl esters had no greater specific action in the early than it had in the later stages of the disease.

Percentages showing the improvement in the different types of the disease would not, in the cases treated, be of any value, because a large number of these cases showed symptoms of both types of the disease and the attempt at classification according to type was of necessity unsatisfactory because based on a greater or less preponderance of the symptoms of one type over the other rather than a clear cut differentiation into pure types of either nerve or skin leprosy.

In regard to the total number of patients (2 out of 48) that became bacteriologically negative during the time the esters were administered, there is no great discrepancy in percentages as compared to the percentages of patients paroled during the same time after treatments by other methods. In those cases in which increase in the severity of symptoms was noted, the treatment could not be regarded as the cause of retrogression, as the majority of these patients were not progressing favorably at the time of inception of treatment. Leprous reactions of a generalized character accompanied by fever and exacerbations of leprosy symptoms in nerve or skin were not more frequent than might be expected in untreated cases and local reactions consisted only of slight and transient soreness at the seat of injection.

An analysis was attempted of the nodular manifestations of skin leprosy with reference to diagnostic characteristics. This study illustrated with photographs of typical cases was published during the year.

#### EYE, EAR, NOSE, AND THROAT SERVICE

In May, 1930, the previously existing eye department was enlarged in scope to include ear, nose, and throat, in the hope that added specialistic care might not only relieve some of the existing disorders, but, by prophylaxis, prevent or delay extensions into these fields. The new facilities were received most enthusiastically by almost the entire patient body, as evidenced by the fact that 120,000 treatments were given by the department during the year. The consulting specialist on his weekly visits made a total of 10,000 examinations, an average of 193 patients weekly, refracting patients and furnishing glasses when needed as well as performing 100 operations.

#### NEUROPSYCHIATRIC SERVICE

During the year there were examined 68 new patients ranging in age from 10 to 68 years, 19 females and 49 males of various nationalities. Ninety-three patients previously seen sought advice and



treatment for neurological manifestations, the most frequent of which were nerve pains and paralyses. There was a total of nearly 300 consultations.

Seventeen patients, candidates for parole, were examined. While in all of these the arrest of the disease was quite apparent, some few led the group by the complete disappearance of previously intensive neurological disturbances.

The general mental attitude of the patients toward the necessity for institutional care has changed considerably for the better. One of the main contributory factors may be the encouragement brought about by the paroling of a considerable number of patients during the past few years. Mental depression is now infrequent, while a general state of hopefulness prevails.

Of the psychotic group, three have shown marked improvement. There were five patients in the psychopathic ward at the close of the fiscal year.

A patient in an advanced mixed type of leprosy developed a unilateral musculo-spiral paralysis with pressure as cause. He recovered complete use of hand within six weeks.

#### ORTHOPEDIC SERVICE

In the past it has been the custom to use operative procedure for the eradication of necrotic conditions both of the bones and the soft parts. In many cases such procedure necessarily produced, to a certain extent, mutilations or contractions of the part involved, and materially reduced its function, thereby more decidedly hampering the individual especially if the part affected was in the hands or feet. During the past two years it has appeared advisable to attempt palliative measures in taking care of these necrotic conditions and to resort only to operative procedure when other treatment failed. This has resulted in the reduction in the number of operations, and the continued use of hot hypertonic salt solution and hot saturated boracic-acid solution as soaks and of wet compresses has proved extremely valuable in obviating the necessity of operation in these cases. The most serious and persistent obstacle to the use of palliative treatment is pressure and weight bearing, and it is often difficult to get a patient to abstain from using the part affected; it is absolutely necessary to prohibit any function of the part that produces pressure, as pressure only increases trauma, prolongs the condition, and reduces the efficiency of the treatment to a minimum.

Nerve pains greatly incapacitate some patients, and when persistent, lower their morale considerably. Though such conditions are not strictly orthopedic in nature they may lead to deformities, and so they are referred to the physiotherapy department for treatment. The application of the infra-red ray, and biplate diathermy applications

as near as possible over the area affected has produced gratifying results; these conditions continue to be relieved by such measures, and contraction deformities of the hands and fingers are thus prevented in many instances.

Patients who have had nerve pains once and have been relieved often apply to the department for treatment, even before they have been referred by the officer in charge of their case, as soon as they feel that there might be a recurrence.

Contraction deformities of the hands and fingers are disabling, especially when complicated with anesthesia, and patients with such conditions often have to use both hands to open a door or lift a cup or glass to the mouth. They consequently sustain burns and abrasions of the hands and develop a greater loss of function, and subsequent atrophy of muscles and bone occurs. In anticipating the establishment of these conditions many patients are treated with the idea of prevention. If contractions have already occurred when the case is admitted, they are immediately treated with contrast baths, massage, and active and passive exercises with the hope of correcting the deformity or at least preventing further deformity. In all such cases, as correction or arrestment of the deformity occurs, there is an increase in the muscular action and tone and a decrease in atrophy of the soft parts and bone. The use of light splints to aid in the correction of deformities, though efficient when used, has not proved satisfactory to patients, as their use interferes with recreation in many instances and they decline to have them applied.

Anesthetic extremities continue to be of especial interest in that they may develop contraction deformities of a progressive nature, and also because they present difficulties to treatment. Since anesthesia exists in such cases, the problem of determining just how much treatment may be given in each special case demands a close study of that particular individual; possessing a lowered local resistance, they may develop complicating lesions if a too strenuous procedure is used; also because of the loss of sensation, they often develop trauma of one sort or another, and treatment of the deformity is necessarily interrupted. With the procedure used at present, anesthesia of the fingers, hands, and feet continues to improve, and in some instances has been completely relieved. These cases are treated with contrast baths, massage, radiant light, and exercises.

Congenital deformities, unlike acquired deformities, are rarely encountered in leprosy, and for that reason the mention of a bilateral congenital clubfoot is here made. A patient, a man aged 37, was admitted to the hospital early in 1931 presenting an extreme type of bilateral talipes equinovarus congenita; he walked on the extero-dorsal aspect of each foot, with the toes pointing to the opposite knee, and for years had been forced to have his shoes specially made. An

operation was performed, the left foot being selected; and now, though still wearing the cast, the patient is able to walk with the foot practically straight. A second operation should completely straighten the foot. Later the other foot will be operated on.

#### DENTAL SERVICE

Eighty-one new and readmitted patients hospitalized received dental examinations; 20 showed symptoms of early or advanced pyorrhea alveolaris, with considerable bone resorption. Symptoms of Vincent's angina occurred in three patients; and in three examined, lepromata were present lingually on the gum margin of the anterior teeth, with ulceration of the soft palate.

In two advanced cases of nerve leprosy, there was complete loss of sensation on the mucous membrane of right and left cheek. Two patients examined showed complete perforation of bone in the region of the hard palate, and in another the soft tissues of the palatine velum were perforated. All three patients, however, had positive Wassermanns.

Dental routine has consisted principally of prophylaxis, treatment of pyorrhea alveolaris, extractions, prosthetic and operative dentistry, crown and bridge work, and miscellaneous treatments.

Because of facial deformities from paralyses and other pathological conditions of the mouth and adjacent tissues, normal facial expression is very difficult to restore. However, 81 dentures were being worn by patients at the close of the fiscal year.

#### LABORATORY SERVICE

One thousand one hundred and four persons were examined bacterioscopically for *Mycobacterium leprae*; these included patients in the hospital, former patients who had been paroled, and nonresident applicants for diagnosis. Of 785 bacterioscopic examinations made of patients in the hospital, 481, or 61 per cent, were negative.

A clinical photograph was made of each patient on admission and subsequently as often as clinical changes warranted; and these photographs were filed in the patients' clinical folders and kept as a permanent record of their physical condition. During the year 620 such photographs were made.

The cultivation of acid-fast microorganisms from lepers has been reported by many workers; while others using similar techniques have frequently failed to obtain cultures, demonstrating that culture media and technique suitable for routine work in this field have not been found. Endeavoring to find satisfactory media for artificial cultivation of these organisms, several kinds of media have been used, including modifications of egg mixtures, protein combinations, sugar

combinations, and media prepared from tissues showing marked leprous pathology. These were inoculated with materials from active leprous lesions and incubated in the presence of carbon dioxide, in the presence of oxygen, and in tubes sealed with rubber corks, both at 37° C. and at room temperature. Some encouraging results were obtained, but definite conclusions can not, as yet, be drawn.

Complete autopsies, except brain and spinal cord and these in some cases, were performed on 10 patients dying in this hospital.

Records were made of gross pathologic findings. Sections of all important organs, of some nerve trunks, and of the skin were removed, prepared, stained, and studied microscopically for histologic changes and for presence of microorganisms. These findings were recorded and with the gross pathologic records were filed in the patients' clinical record.

The sera of all new patients admitted are examined by the Kolmer quantitative complement fixation method and Kahn's precipitation test. Patients who are receiving antisyphilitic treatments are also similarly tested from time to time.

Of the 110 examinations made by each method during the year, 49 sera were negative by both Kolmer and Kahn methods; 24 were negative by Kolmer and positive by Kahn, 10 of which showed a 3-plus or higher reading by Kahn method; and 6 were negative by Kahn and positive by Kolmer, all but 3 of which, however, showed a weakly positive reading by Kolmer's method, and of these 2 were read as positive while the other was strongly positive.

Of the 9 sera that were very strongly positive by Kolmer, 5 were 4+, 3 were 3+, and 1 was 2+ by the Kahn method. Of the 7 sera that were strongly positive by Kolmer, 3 were 4+, 1 was 3+, 1 was 2+, and 2 were 1+ by Kahn. Of the 7 sera that were positive by Kolmer, 4 were 4+, 1 was 3+, and 2 were negative by Kahn. Of the 9 sera that were weakly positive by Kolmer, 4 were 4+, 1 was 3+ and 3 were negative by Kolmer. Of the 5 sera that were anticomplementary by Kolmer, 2 were 4+, 1 was + and 2 were negative by Kahn.

A phenomenon sometimes spoken of as zoning, partial or complete hemolysis in tubes of larger quantities of sera with less hemolysis or even complete inhibition of hemolysis in the tubes with less serum, as for example - 2431 -, 12443 -, etc., was noted in 19 of the 110 sera of lepers analyzed by Kolmer's method, demonstrating the sources of error that might have occurred in the 1 or even 2 tube method of Wassermann tests.

The greater part of the current work with respect to blood chemistry has been devoted to research. Two hundred and eighty-two determinations for total calcium, 277 for diffusible calcium, 282 for inorganic

phosphorus, and 212 erythrocyte sedimentation tests were made on 54 patients taking viosterol, and on a series of patients carried as controls who showed a deficiency in diffusible calcium.

Sixty-five serum albumen and 65 serum globulin analyses were made in connection with the calcium and phosphorus, and it was found that apparent changes occurred in the albumen-globulin ratios in the blood sera of many cases, especially those showing marked reductions of diffusible calcium.<sup>1</sup>

During the year the basal metabolism rate was studied on 53 patients, totaling 104 determinations. Some deviations from the normal were noted; but definite conclusions could not be drawn from the small series of cases, and the study is being continued.

Blood sugar analysis has been done routinely on leprous diabetic patients taking insulin, 242 analyses being made during the year.

A study of the CO<sub>2</sub> combining power and the hydrogen ion concentrations of the blood of the patients is being made. This work was only recently begun and not sufficient time has elapsed to warrant drawing any conclusions.

In an effort to find an agent that would correct the errors of calcium metabolism in lepers, 54 patients who were showing bone absorption and had low diffusible calcium were given viosterol 250 D during the past year and their blood sera were analyzed about every three months for total calcium, diffusible calcium, and phosphorus, and the erythrocyte sedimentation time was recorded.<sup>2</sup>

A study of the effect of various combinations of yeast, some with and others without the addition of sugars, has been made on a series of about 15 leper patients. Results of this treatment are inconclusive as yet and the experiment is being continued.

A series of eight patients whose feces contained putrefactive bacteria in high dilutions, demonstrated by culture on Kolman's cooked-meat media, were treated with dihydranol (2-4 dihydroxyphenyl n-heptane) obtained through the courtesy of Dr. Paul McIlhenny. The number of patients is not large enough to justify definite conclusions, but some of them have shown improvement in some of their acute clinical manifestations of leprotic changes. This experiment is being continued.

Seventeen patients continued to take smallpox virus intradermally and subcutaneously biweekly, and 719 injections were given to this group during the year. Though this treatment can not be considered a specific for leprosy, several of these patients have shown marked amelioration of symptoms while taking it.

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<sup>1</sup> See Public Health Reports, vol. 47, No. 7, Feb. 12, 1932.

<sup>2</sup> A report of this work is expected to be ready for publication in 1932.

#### X-RAY SERVICE

The X-ray department is constantly revealing new and grotesque pictures of processes involving both bone and soft tissue. Adequate research, it is hoped, will help in the interpretation of these lesions.

#### NURSING SERVICE

The nursing service this year, as contrasted with previous years, shows a large increase in the admittances to both male and female infirmaries. The special condition which brought about this large hospitalization was a severe and prolonged epidemic of erysipeloid leprous reaction. The specificity of this epidemic is demonstrated by the fact that only the leprous were affected, notwithstanding the close and prolonged contact to which the nursing and medical staff were subjected.

It is interesting to note the vast improvement in the general morale of the patients since the introduction of certain additional recreational procedures. The keen competition seems to accelerate both physical and mental functions, broadens views, decreases discontent, and tends to abolish that hand-to-mouth mentality which is so conspicuous in chronic illness.

The different nursing departments are coordinating splendidly. The ear, nose, and throat treatments continue to aggregate approximately 10,000 monthly. The physiotherapy department is equally active, giving approximately 7,000 treatments monthly, including the different modalities. The work in the male and female surgical clinics is particularly heavy, frequent changes of dressing being imperative to maintain personal and general hygiene and to prevent accidental infections. The average monthly dressings number about 8,000.

An interesting item of importance is the work done in the pharmacy. Besides the general daily supplies issued, 14,000 prescriptions were compounded during the year, and 240,000 capsules of different preparations of chaulmoogra oil were filled and distributed.

The interest in occupational therapy seems to be lagging. This is due mostly to the ill effects upon the hands caused by minor injuries sustained while manipulating rough materials.

#### DIETETIC SERVICE

The expansion of the dietetic department, including a kitchen, a cafeteria, cold storage, and subsistence storehouse, adequately provides for the peculiar dietary problems met with here.

Since it is generally conceded that hotel cooking is superior to that of hospitals, the services of a first-class hotel chef were secured. He operates the patients' kitchen as though his clientele were not patients but patrons. A wide range of culinary tastes must be satisfied, since the patients come not only from every section of the United States,

but also from many foreign countries. Approximately two-thirds of the patients are served in the cafeteria. The breakfast menu serves as an illustration of the variety of food offered daily:

Fruit: Varies daily.

Three hot cooked cereals: Grits, oatmeal, and cream of wheat.

Choice of prepared cereals: Cornflakes, grapenuts, puffed rice.

Meat: Varies daily.

Eggs: Fried, hard boiled, soft boiled.

Toast, bread and butter.

Hot and cold milk, coffee, tea, and cocoa.

Patients unable to go to the cafeteria are offered an even wider choice of foods. To each of these patients is given, 24 hours in advance, a copy of the day's menu. The patient checks on the menu what he wishes served, and has the further privilege of substituting articles which appeal to his appetite instead of those regularly served. After the bill of fare has been checked and signed by the patient, it is placed on his tray, which is served accordingly. This system involves very little labor or additional cost and is more than compensated for by the increase in satisfaction.

#### LAUNDRY SERVICE

From time to time, cost analyses are made of department or project activities to correct or justify apparently abnormal expenditures. During the year a thorough analysis of the administration of the hospital laundry was undertaken.

The laundry in this hospital is vastly different from that in most other hospitals, since the patients in this institution are here for years, if not for life, and the Government assumes the obligation of complete care of the patient. A part of this complete care must necessarily consist of all laundry, and here laundry includes all wearing apparel from underclothes to overcoat. No small amount of the laundry consists in the appropriate washing of sweaters, and the cleaning and pressing of coats, vests, trousers, overalls, etc. This involves many operations and much work not necessary at other hospitals. The quality of the work compares favorably with that of the local commercial laundries.

Comment is not infrequently made in this hospital on the good morale and the general appearance of the patients, as the result of their having a supply of clean linen in their rooms and clean wearing apparel. No doubt a considerable financial saving might be effected by restricting the washing of patients' effects to bed linen, pajamas, and night gowns. It is thought, however, that this would be a false economy and that the personal morale would suffer with the resulting uncleanness, if each patient were required to assume responsibility for the washing of his linen.

### FARM AND DAIRY

Experience of recent years has shown that general truck farming on the station is not economical, because the costs based on an 8-hour day greatly exceed the production costs of local truck farmers who work from sunrise to sunset and can commandeer free family labor. Consequently, aside from certain limited crops, the available farm land has been used for pasturage and for forage crops. Field corn and soy beans have been planted in the lowlands in sufficient quantity to fill two new silos, and alfalfa is being grown in considerable quantity.

The dairy stock, consisting of 61 milch cows, five bulls, and 27 calves, is thoroughbred and is an accredited, tuberculosis-tested herd. A total of 48,831 gallons of milk was produced during the year. Had this quantity of milk been purchased in the market, the additional expense to the hospital would have been approximately \$6,500.

### TALKING PICTURES

During the early part of the fiscal year, funds became available, through the efforts of the What Cheer Club (a social organization composed of patients), to install sound reproducing equipment in the recreation hall. Accordingly, contracts for silent moving pictures were canceled and on November 3, 1930, the first regular "talkie" was shown.

### COURT DECISION RELATING TO PUBLIC HEALTH

*Harrison Antinarcotic Act construed*—(U. S. Supreme Court; *Blockburger v. United States*, 52 S. Ct. 180; decided Jan. 4, 1932.) Sections 1 and 2 of the Harrison Antinarcotic Act (U. S. Code, title 26, secs. 692, 696) read, in part, as follows:

It shall be unlawful for any person to purchase, sell, dispense, or distribute any of the aforesaid drugs [opium and other narcotics] except in the original stamped package or from the original stamped package; \* \* \*.

It shall be unlawful for any person to sell, barter, exchange, or give away any of the drugs specified in section 691 of this title except in pursuance of a written order of the person to whom such article is sold, bartered, exchanged, or given on a form to be issued in blank for that purpose by the Commissioner of Internal Revenue.

The defendant in the trial court was convicted on three counts of violating the above provisions. Each of the counts charged a sale of morphine hydrochloride to the same purchaser. One count charged a sale on a specified day of 10 grains of the drug not in or from the original stamped package, another charged a sale on the following day of 8 grains of the drug not in or from the original stamped package, and the last charged the latter sale also as not having been made in pursuance of the purchaser's written order.



From the evidence it appeared that, shortly after delivery of the drug which was the subject of the first sale, the purchaser paid for an additional quantity which was delivered the next day. The defendant contended that these two sales, having been made to the same purchaser and following each other with no substantial interval of time between the delivery of the drug in the first transaction and the payment for the second quantity sold, constituted a single continuing offense. In holding this contention to be unsound, the Supreme Court stated, in part, as follows:

\* \* \* But the first sale had been consummated and the payment for the additional drug, however closely following, was the initiation of a separate and distinct sale completed by its delivery.

\* \* \* The narcotic act does not create the offense of engaging in the business of selling the forbidden drugs, but penalizes any sale made in the absence of either of the qualifying requirements set forth. Each of several successive sales constitutes a distinct offense, however closely they may follow each other. \* \* \*

Another point argued by the defendant was that the second sale, charged as having been made not from the original stamped package, and the same sale also charged as having been made not in pursuance of a written order of the purchaser constituted but one offense for which only a single penalty could lawfully be imposed. This claim was also rejected by the court, which said:

The statute is not aimed at sales of the forbidden drugs qua sales, a matter entirely beyond the authority of Congress, but at sales of such drugs in violation of the requirements set forth in sections 1 and 2, enacted as aids to the enforcement of the stamp tax imposed by the act. [Cases cited.]

Each of the offenses created requires proof of a different element. The applicable rule is that, where the same act or transaction constitutes a violation of two distinct statutory provisions, the test to be applied to determine whether there are two offenses or only one is whether each provision requires proof of an additional fact which the other does not. \* \* \* Applying the test, we must conclude that here, although both sections were violated by the one sale, two offenses were committed.

The court also held that there was no merit in the defendant's claim that the language of section 9 of the narcotic act (U. S. Code, title 26, sec. 705), prescribing the penalty for violation, was to be construed as imposing a single punishment for a violation of the distinct requirements of sections 1 and 2 when accomplished by one and the same sale. "The plain meaning of the provision," said the court, "is that each offense is subject to the penalty prescribed; and, if that be too harsh, the remedy must be afforded by act of Congress, not by judicial legislation under the guise of construction."

## DEATHS DURING WEEK ENDED FEBRUARY 20, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended February 20, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Feb. 20, 1932	Correspond- ing week, 1931
Policies in force.....	74, 003, 681	75, 140, 437
Number of death claims.....	16, 055	17, 290
Death claims per 1,000 policies in force, annual rate.....	11. 3	12. 0
Death claims per 1,000 policies, first 7 weeks of year, annual rate.....	9. 9	11. 2

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended February 20, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census.]

City	Week ended Feb. 20, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 7 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8, 714	12. 5	661	4. 51	14. 5	896	12. 0	14. 4
Akron.....	47	9. 2	3	37	8. 3	6	8. 0	8. 5
Albany.....	37	14. 8	1	20	15. 3	3	15. 1	15. 9
Atlanta.....	58	10. 7	7	68	21. 4	12	14. 8	16. 3
White.....	31	9. 5	3	44	14. 4	4	11. 7	13. 5
Colored.....	24	13. 1	4	115	35. 2	8	21. 1	22. 1
Baltimore.....	226	14. 4	11	39	16. 6	26	13. 9	17. 9
White.....	180	14. 0	9	41	15. 6	18	13. 1	16. 6
Colored.....	46	16. 0	2	32	21. 0	8	17. 4	24. 0
Birmingham.....	67	12. 6	6	63	17. 2	14	12. 3	14. 9
White.....	39	11. 9	2	33	12. 5	4	10. 2	11. 0
Colored.....	28	13. 9	4	108	24. 9	10	15. 8	21. 1
Boston.....	232	15. 4	20	69	18. 3	18	15. 0	17. 8
Bridgeport.....	37	13. 1	2	38	15. 2	3	11. 7	14. 4
Buffalo.....	156	13. 9	20	96	16. 1	20	13. 2	15. 0
Cambridge.....	28	12. 8	1	21	11. 4	3	13. 7	14. 2
Camden.....	32	11. 0	2	35	23. 7	6	14. 5	19. 1
Canton.....	20	9. 7	3	75	9. 8	3	9. 5	11. 0
Chicago.....	815	12. 1	71	70	12. 7	62	11. 0	12. 7
Cincinnati.....	134	15. 2	13	84	18. 2	6	16. 2	18. 2
Cleveland.....	206	11. 7	22	71	15. 2	17	10. 9	12. 0
Columbus.....	75	13. 1	3	80	16. 4	7	15. 0	14. 5
Dallas.....	53	9. 8	5	11	11. 5	11	11. 1	12. 7
White.....	47	10. 5	4	11	11. 3	9	10. 5	11. 6
Colored.....	6	6. 4	1	100	12. 1	2	14. 0	17. 8
Dayton.....	68	14. 9	7	100	14. 6	9	11. 6	12. 1
Denver.....	98	17. 4	7	69	17. 2	9	17. 2	16. 1
Des Moines.....	42	15. 0	2	34	11. 2	6	12. 5	12. 4
Detroit.....	266	8. 7	31	56	11. 9	51	8. 3	9. 6
Duluth.....	22	11. 3	1	20	14. 9	2	10. 2	12. 0
El Paso.....	36	17. 6	4	20	4	8	15. 8	20. 1
Erie.....	24	10. 5	1	21	14. 2	5	10. 8	11. 9
Fall River.....	27	12. 2	1	27	15. 8	7	12. 6	13. 6
Flint.....	34	10. 4	5	73	6. 7	3	8. 4	7. 1
Fort Worth.....	32	9. 8	3	10	9. 7	0	10. 0	11. 6
White.....	27	9. 8	3	10	9. 7	0	10. 0	10. 8
Colored.....	5	9. 8	0	11	11. 5	0	15. 4	15. 3
Grand Rapids.....	34	10. 2	1	17	7. 0	0	8. 3	9. 5
Houston.....	80	12. 9	10	12	12. 3	4	10. 9	12. 1
White.....	60	13. 1	7	12	12. 2	3	10. 3	11. 0
Colored.....	20	12. 2	3	12	12. 6	1	12. 6	15. 1

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended February 20, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Feb. 20, 1932				Corresponding week, 1931		Death rate for the first 7 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Indianapolis <sup>6</sup>	86	12.0	5	41	18.9	8	13.1	15.4
White	69	11.0	3	28	18.6	7	12.5	14.8
Colored	17	19.3	2	137	20.8	1	17.8	19.4
Jersey City	70	11.4	9	75	13.7	10	11.0	14.9
Kansas City, Kans <sup>6</sup>	23	9.7	1	22	20.8	3	13.2	17.0
White	19	9.9	1	27	18.4	3	12.5	15.7
Colored	4	8.8	0	0	31.1	0	15.8	22.8
Kansas City, Mo.	109	13.7	5	57	17.1	6	12.6	15.2
Knoxville <sup>6</sup>	23	10.7	2	51	15.3	4	11.3	14.7
White	20	11.2	2	56	16.5	4	10.8	13.7
Colored	3	8.6	0	0	8.8	0	14.3	19.7
Long Beach	43	14.0	1	26	7.9	1	11.4	10.6
Los Angeles	335	12.7	27	80	10.2	17	12.6	12.2
Louisville <sup>6</sup>	83	14.1	5	46	14.7	10	14.6	17.5
White	62	12.4	3	31	12.8	8	13.0	15.6
Colored	21	23.0	2	149	25.1	2	23.3	28.1
Lowell <sup>7</sup>	29	15.1	5	131	12.0	3	15.4	14.8
Lynn	27	13.7	1	28	12.7	4	11.5	13.4
Memphis <sup>6</sup>	83	16.5	7	76	18.1	14	17.4	16.6
White	37	11.9	3	51	14.7	9	13.3	14.3
Colored	46	23.0	4	120	23.7	5	24.0	20.5
Miami <sup>6</sup>	19	8.7	0	0	14.4	5	13.1	13.6
White	13	7.7	0	0	12.0	3	12.5	13.3
Colored	6	12.4	0	0	22.7	2	15.1	14.7
Milwaukee	114	9.0	10	48	12.7	12	9.3	11.1
Minneapolis	136	14.8	0	59	12.8	9	10.6	12.5
Nashville <sup>6</sup>	39	13.0	5	75	19.8	7	13.5	17.1
White	28	12.8	3	59	15.7	4	13.0	14.0
Colored	11	13.4	2	125	30.5	3	14.0	23.1
New Bedford <sup>7</sup>	31	14.4	0	0	14.8	7	12.7	13.8
New Haven	32	10.3	1	20	13.5	2	12.6	13.3
New Orleans <sup>6</sup>	119	13.1	6	34	19.2	11	15.3	20.7
White	75	11.6	1	9	15.2	8	12.8	17.2
Colored	44	16.7	5	82	29.0	3	21.6	29.4
New York	1,647	11.0	116	52	12.7	170	10.8	14.5
Bronx Borough	234	8.9	9	26	9.2	25	8.2	10.5
Brooklyn Borough	583	11.4	46	51	11.4	67	9.9	13.6
Manhattan Borough	606	17.8	46	68	20.2	59	16.6	21.7
Queens Borough	174	7.5	12	50	7.6	16	6.9	9.8
Richmond Borough	50	15.6	3	59	16.0	3	13.6	14.8
Newark, N. J.	119	13.9	10	55	13.3	15	11.1	14.8
Oakland	60	10.5	2	25	12.8	2	11.8	11.8
Oklahoma City	38	9.6	3	41	12.2	9	10.1	11.7
Omaha	88	21.0	4	45	13.7	3	15.8	14.6
Paterson	33	12.4	1	18	12.4	5	12.9	15.6
Peoria	34	16.0	1	28	13.0	2	12.4	15.3
Philadelphia	517	13.7	37	57	15.8	57	12.7	17.2
Pittsburgh	205	15.7	12	55	23.4	32	14.0	18.2
Portland, Oreg.	72	12.1	4	51	11.9	0	12.6	12.0
Providence	64	13.1	4	39	17.2	5	14.6	16.2
Richmond <sup>6</sup>	45	12.7	4	60	22.4	8	15.3	18.8
White	22	8.7	2	45	20.6	5	12.8	15.6
Colored	23	22.8	2	92	26.6	3	21.8	26.6
Rochester	71	11.1	5	48	16.0	8	11.6	13.8
St. Louis	215	13.5	19	68	22.1	16	14.1	19.0
St. Paul	72	13.5	0	0	13.0	4	10.6	10.9
Salt Lake City <sup>6</sup>	37	13.3	3	47	9.8	2	12.1	12.0
San Antonio	89	18.8	18	14.1	9	9	14.7	15.6
San Diego	54	17.3	1	22	17.0	3	17.1	10.7
San Francisco	176	13.9	4	28	18.0	15	14.7	14.6
Schenectady	19	10.3	2	58	17.3	4	11.5	12.0
Seattle	92	12.8	3	30	12.2	8	12.0	12.4
Somerville	21	10.3	2	80	16.4	0	9.9	12.4
South Bend	21	9.9	0	0	11.6	2	8.9	8.3
Spokane	23	10.3	0	0	11.7	5	12.3	12.8
Springfield, Mass.	19	6.4	3	51	12.3	1	12.2	13.8
Syracuse	46	11.1	3	30	15.4	8	12.0	13.7
Tacoma	25	12.0	3	83	17.9	4	12.2	14.4

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended February 20, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Feb. 20, 1932				Corresponding week, 1931		Death rate for the first 7 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Tampa <sup>1</sup> .....	18	8.7	3	86	14.9	3	11.4	16.2
White.....	12	7.4	1	35	12.6	2	10.5	14.6
Colored.....	6	13.8	2	317	23.5	1	14.7	22.1
Toledo.....	58	10.1	5	54	14.9	2	12.1	13.1
Trenton.....	29	12.2	2	40	19.4	3	14.9	19.2
Utica.....	19	9.7	4	114	17.3	0	15.6	16.6
Washington, D. C. <sup>6</sup> .....	127	13.4	9	51	20.8	18	15.8	19.3
White.....	69	13.0	2	16	16.4	5	14.2	16.7
Colored.....	38	14.5	7	125	32.4	13	20.1	25.9
Waterbury.....	13	6.7	1	33	12.9	2	9.5	11.6
Wilmington, Del. <sup>7</sup> .....	34	16.7	2	45	13.7	4	14.1	17.2
Worcester.....	44	11.6	6	84	13.0	2	12.4	15.9
Yonkers.....	23	8.5	1	26	10.9	2	7.4	11.6
Youngstown.....	40	11.9	2	32	17.5	9	10.4	11.9

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21, and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended February 27, 1932, and February 28, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 27, 1932, and February 28, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931
<b>New England States</b>								
Maine	3	6	19	71	481	48	0	0
New Hampshire	1			21	16	82	0	0
Vermont				1	89	4	0	0
Massachusetts	58	39	12	53	369	481	2	4
Rhode Island	2	7		1	670	1	0	0
Connecticut	8	9	24	133	301	438	3	2
<b>Middle Atlantic States</b>								
New York	133	120	1,322	1,92	1,908	1,099	9	20
New Jersey	47	53	99	104	189	721	4	4
Pennsylvania	198	99			2,649	2,444	9	16
<b>East North Central States</b>								
Ohio	67	67	488	826	1,157	580	0	7
Indiana	57	42	150	129	76	878	12	8
Illinois	59	152	219	245	150	1,427	11	12
Michigan	23	38	135	261	539	270	1	11
Wisconsin	16	14	767	249	318	381	2	3
<b>West North Central States</b>								
Minnesota	13	11	2	2	121	67	1	1
Iowa	13	7	22	1	7	15	0	1
Missouri	38	27	27	100		551	1	14
North Dakota	14	9			77	6	0	2
South Dakota	6	4	216		62	14	1	0
Nebraska	9	9	7	30	26	4	1	2
Kansas	15	13	28	344	192	27	3	3
<b>South Atlantic States</b>								
Delaware	8			7	2	24	0	0
Maryland <sup>1</sup>	30	24	82	352	38	727	1	1
District of Columbia	12	31	3	8	2	90	1	1
Virginia <sup>2</sup>								
West Virginia	20	13	124	169	487	62	0	0
North Carolina	21	14	63	365	294	410	2	2
South Carolina	8	9	1,037	3,463	90	160	0	9
Georgia	10	11	92	1,421	6	134	2	3
Florida	14	6		204	3	135	0	8

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Feb. 27, 1932, 1 case in Virginia.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 27, 1932, and February 28, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931
<b>East South Central States:</b>								
Kentucky.....	17	2	435	9	85	203	7	2
Tennessee.....	27	7	335	355	73	277	2	3
Alabama.....	20	24	83	407	—	531	0	4
Mississippi.....	14	8	—	—	—	—	0	2
<b>West South Central States:</b>								
Arkansas.....	13	—	145	166	2	1	0	0
Louisiana.....	29	47	7	151	11	9	1	4
Oklahoma <sup>1</sup> .....	28	21	1,306	184	31	7	7	1
Texas.....	45	36	251	33	28	111	1	1
<b>Mountain States</b>								
Montana.....	1	1	1,867	—	56	1	0	1
Idaho.....	—	—	1	4	—	4	1	3
Wyoming.....	—	1	—	—	—	2	0	1
Colorado.....	3	6	—	—	69	147	2	2
New Mexico.....	13	4	8	1	60	27	1	1
Arizona.....	5	5	40	5	2	157	0	3
Utah <sup>2</sup> .....	—	2	22	—	—	—	0	2
<b>Pacific States:</b>								
Washington.....	2	11	8	—	583	44	1	2
Oregon.....	1	8	323	77	99	99	0	0
California.....	68	57	230	555	420	939	5	6
<hr/>								
Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931
<b>New England States.</b>								
Maine.....	0	0	23	19	0	0	1	1
New Hampshire.....	0	0	34	4	0	0	0	0
Vermont.....	0	0	20	7	20	0	3	0
Massachusetts.....	0	2	499	378	0	0	1	2
Rhode Island.....	0	0	57	58	0	0	0	0
Connecticut.....	1	0	129	40	3	0	1	0
<b>Middle Atlantic States:</b>								
New York.....	10	2	1,520	951	3	6	9	17
New Jersey.....	0	0	265	272	0	0	1	1
Pennsylvania.....	0	0	883	595	0	0	13	10
<b>East North Central States</b>								
Ohio.....	0	3	611	707	41	54	5	12
Indiana.....	0	0	183	410	13	137	8	3
Illinois.....	3	1	411	547	16	33	10	4
Michigan.....	1	1	441	386	3	32	7	1
Wisconsin.....	1	0	147	161	10	6	1	1
<b>West North Central States:</b>								
Minnesota.....	1	3	150	119	3	4	2	6
Iowa.....	1	0	57	120	18	54	1	0
Missouri.....	0	0	82	232	5	50	1	0
North Dakota.....	0	0	19	28	8	1	0	—
South Dakota.....	0	0	15	38	14	21	0	0
Nebraska.....	0	0	54	56	8	55	1	1
Kansas.....	0	1	95	76	2	103	2	1
<b>South Atlantic States:</b>								
Delaware.....	0	0	9	30	0	0	1	0
Maryland <sup>3</sup> .....	0	1	147	142	0	0	6	3
District of Columbia.....	0	0	22	18	0	0	1	0
Virginia <sup>4</sup> .....	—	—	—	—	—	—	—	—
West Virginia.....	0	1	36	21	0	4	4	7
North Carolina.....	0	0	37	47	5	0	4	2
South Carolina.....	1	1	11	11	0	0	9	6
Georgia.....	0	1	14	69	0	0	11	17
Florida.....	1	0	5	4	1	0	3	3

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Feb. 27, 1932, 1 case in Virginia.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended February 27, 1932, and February 28, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931	Week ended Feb. 27, 1932	Week ended Feb. 28, 1931
East South Central States								
Kentucky.....	2	0	112	91	4	11	11	6
Tennessee.....	0	0	33	48	22	1	9	1
Alabama.....	0	0	32	21	3	8	6	5
Mississippi.....	0	0	8	27	36	18	7	4
West South Central States:								
Arkansas.....	0	0	32	13	11	10	2	6
Louisiana.....	0	0	15	22	11	33	20	8
Oklahoma.....	0	0	30	42	37	180	1	8
Texas.....	0	0	59	23	7	60	4	1
Mountain States:								
Montana.....	1	1	28	41	1	1	1	0
Idaho.....	0	0	3	12	0	2	0	2
Wyoming.....	0	0	11	39	0	2	0	0
Colorado.....	0	0	29	54	1	11	0	2
New Mexico.....	1	0	8	9	0	1	0	0
Arizona.....	1	0	4	2	0	1	0	0
Utah.....	0	0	2	11	0	0	0	0
Pacific States:								
Washington.....	1	0	25	68	16	33	2	0
Oregon.....	0	1	24	32	10	32	3	0
California.....	3	3	151	120	15	45	8	5

<sup>2</sup> Week ended Friday

<sup>4</sup> Figure for 1932 are exclusive of Oklahoma City and Tulsa.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week

State	Men- ingo- coccus menin- gitis	Diph- theria	Influen- za	Ma- laria	Meas- les	Pol- lagra	Poli- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>December, 1931</i>										
Hawaii Territory	2	17			195		0	2	0	6
<i>January, 1932</i>										
Alabama.....	8	193	324	65	39	16	4	183	194	79
Colorado.....	5	47	3		58		2	215	14	4
Delaware.....		25	7		7			77	0	0
Illinois.....	31	590	193	8	279	4	20	1,098	86	40
Louisiana.....	4	147	60	8	47	8		75	19	51
Missouri.....	12	315	31	12	96		2	463	121	8
Montana.....	2	11	452		481		2	161	10	8
New Mexico.....	1	75	263		40		3	56	5	7
New York.....	42	618		3	3,925		16	3,504	18	73
North Carolina.....	11	217	110		545	59	9	294	7	36
Oregon.....	1	10	354	2	107		1	133	87	9
Pennsylvania.....	32	590			5,593	2	8	2,587	0	91
Rhode Island.....		37	11		1,205			180	0	0
West Virginia.....	1	214	245		1,543		1	238	11	69
Wisconsin.....	10	98	119		741		7	422	13	5

*December, 1931*

Hawaii Territory—Continued.

Cases

Hawaii Territory:	Cases	Hookworm disease.....	32
Chicken pox.....	10	Leprosy.....	1
Conjunctivitis, follicular.....	203	Mumps.....	3
Dysentery (amebic).....	1	Puerperal septicemia.....	3
Dysentery (bacillary).....	1	Trachoma.....	6
		Whooping cough.....	0

<i>January, 1932</i>		<b>Mumps—Continued.</b>	
<b>Anthrax:</b>	<b>Cases</b>		<b>Cases</b>
Montana.....	1	Missouri.....	56
New York.....	1	Montana.....	9
<b>Chicken pox:</b>		New Mexico.....	44
Alabama.....	183	New York.....	1,066
Colorado.....	284	Oregon.....	130
Delaware.....	93	Pennsylvania.....	2,521
Illinois.....	1,804	Rhode Island.....	361
Louisiana.....	13	West Virginia.....	38
Missouri.....	465	Wisconsin.....	1,112
Montana.....	154	<b>Ophthalmia neonatorum:</b>	
New Mexico.....	101	Colorado.....	1
New York.....	2,707	Illinois.....	9
North Carolina.....	575	New York.....	4
Oregon.....	275	North Carolina.....	1
Pennsylvania.....	4,068	Pennsylvania.....	27
Rhode Island.....	127	<b>Paratyphoid fever:</b>	
West Virginia.....	281	Colorado.....	1
Wisconsin.....	1,845	Illinois.....	3
<b>Dysentery:</b>		New York.....	10
Illinois.....	24	<b>Psittacosis.</b>	
Illinois (amebic).....	1	Oregon.....	1
Illinois (bacillary).....	4	<b>Puerperal septicemia</b>	
New York.....	4	Colorado.....	2
<b>Food poisoning:</b>		Illinois.....	13
New Mexico.....	2	New York.....	15
<b>German measles.</b>		Pennsylvania.....	24
Colorado.....	5	<b>Rabies in animals</b>	
Illinois.....	11	Illinois.....	12
Montana.....	4	Louisiana.....	4
New Mexico.....	3	Missouri.....	4
New York.....	113	New York <sup>1</sup> .....	4
North Carolina.....	22	<b>Scabies</b>	
Pennsylvania.....	91	Montana.....	5
Rhode Island.....	7	Oregon.....	50
Wisconsin.....	31	<b>Septic sore throat:</b>	
<b>Hookworm disease:</b>		Illinois.....	11
Louisiana.....	4	Louisiana.....	1
<b>Impetigo contagiosa:</b>		Missouri.....	17
Colorado.....	3	Montana.....	13
Illinois.....	5	New York.....	30
Montana.....	4	North Carolina.....	17
Oregon.....	89	Oregon.....	3
<b>Lead poisoning:</b>		Rhode Island.....	3
Illinois.....	1	<b>Silicosis, pulmonary.</b>	
<b>Leprosy.</b>		Montana.....	1
Louisiana.....	5	<b>Tetanus.</b>	
<b>Lethargic encephalitis</b>		Illinois.....	3
Alabama.....	2	Louisiana.....	4
Illinois.....	1	New York.....	4
New York.....	11	Pennsylvania.....	1
Oregon.....	2	<b>Trachoma:</b>	
Pennsylvania.....	10	Illinois.....	2
Rhode Island.....	1	Louisiana.....	1
Wisconsin.....	1	Missouri.....	35
<b>Ludwig's angina:</b>		Montana.....	1
Illinois.....	1	Oregon.....	1
<b>Milk sickness:</b>		Pennsylvania.....	6
New Mexico.....	1	Wisconsin.....	1
<b>Mumps:</b>		<b>Trichinosis:</b>	
Alabama.....	127	Illinois.....	1
Colorado.....	148	New York.....	10
Delaware.....	35	<b>Tularaemia:</b>	
Illinois.....	278	Alabama.....	4
Louisiana.....	8	Illinois.....	27
		Louisiana.....	4

<sup>1</sup> Exclusive of New York City.



Tularaemia—Continued.		Cases	Vincent's angina—Continued.		Cases
Missouri.....		18	New York <sup>1</sup> .....		65
New York.....		3	Oregon.....		4
North Carolina.....		2	Whooping cough:		
Pennsylvania.....		1	Alabama.....		118
Typhus fever:			Colorado.....		62
Alabama.....		6	Delaware.....		37
North Carolina.....		3	Illinois.....		1,450
Undulant fever:			Louisiana.....		99
Colorado.....		1	Missouri.....		749
Illinois.....		7	Montana.....		41
Louisiana.....		1	New Mexico.....		37
Missouri.....		2	New York.....		2,327
New York.....		7	North Carolina.....		1,373
Oregon.....		3	Oregon.....		51
Wisconsin.....		1	Pennsylvania.....		3,188
Vincent's angina:			Rhode Island.....		110
Illinois.....		31	West Virginia.....		325
New Mexico.....		2	Wisconsin.....		1,058

### PATIENTS IN INSTITUTIONS FOR FEEBLE-MINDED, JANUARY TO MARCH, 1930

Reports for the first quarter of the year 1930 were received by the Public Health Service from 34 institutions for the care of the feeble-minded, located in 28 States and the Territory of Hawaii. The total number of persons in these institutions on March 31, 1930, including those on temporary leave or otherwise absent but still on the books, was 37,062.

The first admissions were as follows:

	Male	Female	Total
January.....	190	181	371
February.....	197	183	380
March.....	202	187	449
Total.....	649	551	1,200

Of the first admissions during the three months, 54.1 per cent were males and 45.9 per cent females, the ratio being 118 males per 100 females.

One hundred and seventy-nine male patients and 129 female patients were discharged and 146 males and 92 females died during the three months. The annual death rates, based on the number of patients on the books March 31, 1930, were: Males, 30.9 per 1,000; females, 20.8 per 1,000; persons, 26.0 per 1,000.

The following table shows the number of patients in the institutions and on temporary leave on January 1, 1930, and at the end of each month of the first quarter of 1930, and the percentages of the total patients who were on leave.

<sup>1</sup> Exclusive of New York City.

	Jan. 1, 1930	Jan. 1, 1930	Feb. 28, 1930	Mar. 31, 1930
<b>Patients in institutions:</b>				
Male.....	15,355	15,758	15,868	16,009
Female.....	15,292	15,578	15,691	15,785
Total.....	30,647	31,336	31,559	31,794
<b>Patients on temporary leave:</b>				
Male.....	3,469	3,149	3,103	3,133
Female.....	2,298	2,123	2,130	2,135
Total.....	5,767	5,272	5,233	5,268
<b>Total patients on books:</b>				
Male.....	18,824	18,907	18,971	19,142
Female.....	17,590	17,701	17,821	17,920
Total.....	36,414	36,608	36,792	37,062
<b>Per cent of total patients on temporary leave</b>				
Male.....	18.4	16.7	16.4	16.4
Female.....	13.1	12.0	12.0	11.9
Total.....	15.8	14.4	14.2	14.2

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended February 20, 1932, and February 21, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
<b>Diphtheria:</b>			
46 States.....	1,170	1,100	-----
98 cities.....	469	447	797
<b>Measles:</b>			
45 States.....	9,186	12,705	-----
94 cities.....	3,471	4,515	-----
<b>Meningococcus meningitis:</b>			
46 States.....	88	145	-----
98 cities.....	45	90	-----
<b>Poliomyelitis:</b>			
46 States.....	23	22	-----
<b>Scarlet fever:</b>			
46 States.....	5,640	5,799	-----
98 cities.....	2,714	2,390	1,592
<b>Smallpox:</b>			
40 States.....	310	904	-----
98 cities.....	29	129	51
<b>Typhoid fever:</b>			
46 States.....	170	145	-----
98 cities.....	20	45	27
<i>Deaths reported</i>			
<b>Influenza and pneumonia:</b>			
91 cities.....	1,080	1,609	-----
<b>Smallpox:</b>			
91 cities.....	0	0	-----

*City reports for week ended February 20, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland .. .	7	0	1	-----	0	216	0	2
New Hampshire:								
Concord .. .	0	1	0	-----	0	0	0	1
Manchester .. .	0	0	0	-----	3	0	0	0
Nashua .. .	0	0	0	-----	0	0	0	0
Vermont:								
Barre .. .	3	0	0	-----	0	0	0	0
Burlington .. .	3	0	0	-----	0	15	0	0
Massachusetts:								
Boston .. .	33	27	40	2	2	20	19	20
Fall River .. .	5	3	0	-----	0	12	6	3
Springfield .. .	25	4	0	1	0	6	36	0
Worcester .. .	4	3	2	-----	0	0	66	5
Rhode Island:								
Pawtucket .. .	0	1	0	-----	0	0	0	0
Providence .. .	17	8	2	-----	0	408	4	5
Connecticut:								
Bridgeport .. .	4	5	0	3	0	0	0	7
Hartford .. .	15	5	0	-----	0	1	33	8
New Haven .. .	13	1	0	8	1	0	16	2
MIDDLE ATLANTIC								
New York:								
Buffalo .. .	46	11	6	-----	0	12	7	23
New York .. .	207	188	107	158	13	75	133	220
Rochester .. .	8	4	1	1	0	390	16	5
Syracuse .. .	26	2	0	-----	0	189	24	3
New Jersey:								
Camden .. .	8	5	5	-----	1	3	1	3
Newark .. .	57	11	5	0	0	1	60	12
Trenton .. .	9	2	0	3	0	2	10	3
Pennsylvania:								
Philadelphia .. .	156	65	14	7	5	6	73	53
Pittsburgh .. .	52	18	0	22	11	186	65	42
Reading .. .	28	2	0	-----	0	4	2	3
EAST NORTH CENTRAL								
Ohio:								
Cincinnati .. .	11	7	4	1	2	0	0	15
Cleveland .. .	88	31	8	31	2	383	123	22
Columbus .. .	9	2	3	230	0	1	2	7
Toledo .. .	42	4	0	11	5	14	1	3
Indiana:								
Fort Wayne .. .	1	3	9	-----	0	0	0	0
Indianapolis .. .	78	6	0	-----	0	3	110	20
South Bend .. .	4	1	0	-----	0	0	0	2
Terre Haute .. .	0	0	1	-----	1	1	0	3
Illinois:								
Chicago .. .	108	92	49	86	18	172	7	96
Springfield .. .	5	1	0	3	2	0	3	3
Michigan:								
Detroit .. .	80	42	25	20	5	48	26	21
Flint .. .	15	2	0	75	0	56	88	12
Grand Rapids .. .	6	1	1	-----	0	126	14	4

## City reports for week ended February 20, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—CON.								
Wisconsin:								
Kenosha.....	4	0	0	-----	0	0	0	3
Madison.....	4	1	1	-----	1	1	1	-----
Milwaukee.....	80	14	5	-----	1	167	53	16
Racine.....	39	1	0	-----	0	10	133	0
Superior.....	1	0	0	-----	0	1	40	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	6	0	0	-----	2	0	0	2
Minneapolis.....	12	13	5	-----	8	2	11	21
St. Paul.....	6	5	0	-----	3	2	3	11
Iowa:								
Davenport.....	5	0	0	-----	-----	0	2	-----
Des Moines.....	0	2	0	-----	-----	0	0	-----
Sioux City.....	3	0	4	-----	-----	0	1	-----
Waterloo.....	8	0	1	-----	-----	0	0	-----
Missouri:								
Kansas City.....	42	5	4	-----	1	1	1	17
St. Joseph.....	15	1	5	-----	0	0	1	1
St. Louis.....	27	37	12	-----	3	2	4	9
North Dakota:								
Fargo.....	1	0	1	-----	0	44	0	0
Grand Forks.....	0	0	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	0	0	0	-----	-----	38	0	-----
Sioux Falls.....	0	0	0	-----	-----	0	0	-----
Nebraska:								
Omaha.....	6	6	5	-----	0	0	0	32
Kansas:								
Topeka.....	22	1	2	-----	1	1	2	0
Wichita.....	23	2	6	-----	0	52	0	5
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	1	-----	0	1	7	4
Maryland:								
Baltimore.....	106	21	9	-----	11	3	2	136
Cumberland.....	0	0	0	-----	1	1	2	0
Frederick.....	3	0	1	-----	0	0	1	0
District of Columbia:								
Washington.....	38	16	18	-----	0	2	3	0
Virginia:								
Lynchburg.....	0	1	1	-----	0	0	0	1
Norfolk.....	2	3	2	-----	0	0	0	8
Richmond.....	4	3	5	-----	2	0	0	3
Roanoke.....	2	1	3	-----	0	0	0	0
West Virginia:								
Charleston.....	6	1	1	-----	3	0	110	0
Huntington.....	0	0	0	-----	0	0	0	0
Wheeling.....	0	0	0	-----	0	3	0	4
North Carolina:								
Raleigh.....	2	0	0	-----	0	59	0	0
Wilmington.....	1	0	0	-----	0	0	0	1
Winston-Salem.....	8	1	1	-----	0	0	1	2
South Carolina:								
Charleston.....	0	0	0	-----	54	0	1	0
Columbia.....	3	0	0	-----	0	0	0	0
Greenville.....	0	1	0	-----	0	0	0	0
Georgia:								
Atlanta.....	2	3	3	-----	23	1	0	1
Brunswick.....	1	0	0	-----	0	0	1	2
Savannah.....	1	0	0	-----	4	0	2	4
Florida:								
Miami.....	1	2	3	-----	0	0	1	2
Tampa.....	0	1	2	-----	0	0	0	1

## City reports for week ended February 20, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumo- nia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	1	-----	0	0	0	3
Lexington.....	5	0	1	-----	0	0	2	2
Tennessee:								
Memphis.....	2	3	7	-----	2	2	0	11
Nashville.....	0	1	2	-----	1	0	0	5
Alabama:								
Birmingham....	2	3	3	4	1	0	5	4
Mobile.....	0	1	0	-----	0	0	0	0
Montgomery.....	2	1	0	-----	-----	0	3	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	-----	-----	0	0	-----
Little Rock.....	2	1	2	-----	0	1	7	3
Louisiana:								
New Orleans.....	0	14	22	4	1	0	0	5
Shreveport.....	3	0	0	0	-----	50	4	6
Oklahoma:								
Muskogee.....	0	-----	0	12	-----	1	0	-----
Oklahoma City....	4	2	0	130	0	0	0	8
Texas:								
Dallas.....	5	7	9	77	4	25	0	10
Fort Worth.....	6	2	7	-----	2	2	0	6
Galveston.....	0	1	0	-----	0	0	0	2
Houston.....	0	6	15	-----	0	0	1	9
San Antonio.....	1	3	0	1	10	0	0	14
MOUNTAIN								
Montana:								
Billings.....	1	1	0	2	0	2	0	0
Great Falls.....	10	0	0	3	3	0	2	2
Helena.....	1	0	0	-----	0	4	0	0
Missoula.....	0	0	0	100	0	0	0	0
Idaho:								
Boise.....	0	0	0	-----	0	0	1	2
Colorado:								
Denver.....	20	8	4	-----	4	9	27	12
Pueblo.....	14	0	1	-----	0	0	1	2
New Mexico:								
Albuquerque.....	2	0	1	-----	0	14	0	1
Arizona:								
Phoenix.....	0	-----	0	-----	1	0	0	2
Utah:								
Salt Lake City....	10	2	0	-----	2	0	1	5
Nevada:								
Reno.....	0	0	1	-----	0	1	0	0
PACIFIC								
Washington:								
Seattle.....	36	4	0	-----	-----	333	1	-----
Spokane.....	11	1	1	-----	-----	8	0	-----
Tacoma.....	8	1	0	0	0	7	2	3
Oregon:								
Portland.....	17	6	4	9	0	24	10	8
Salem.....	1	0	1	50	-----	2	1	-----
California:								
Los Angeles.....	159	32	20	171	2	8	24	17
Sacramento.....	24	2	1	13	3	144	1	11
San Francisco.....	82	13	2	5	1	91	0	8

## City reports for week ended February 20, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland	3	4	0	0	0	0	0	0	0	7	29
New Hampshire:											
Concord	0	10	0	0	0	0	0	0	0	0	10
Manchester	2	9	0	0	0	2	0	0	0	0	26
Nashua	0	1	0	0	0	0	0	0	0	0	
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	2	3
Burlington	1	0	0	0	0	0	0	0	0	4	13
Massachusetts:											
Boston	93	178	0	0	0	11	0	0	0	21	232
Fall River	4	4	0	0	0	2	0	0	0	4	27
Springfield	10	9	0	0	0	1	0	0	0	4	18
Worcester	11	46	0	0	0	1	0	0	0	13	44
Rhode Island:											
Pawtucket	2	0	0	0	0	0	0	0	0	0	24
Providence	15	23	0	0	0	2	0	0	0	13	64
Connecticut:											
Bridgeport	11	4	0	2	0	3	0	0	0	1	37
Hartford	7	8	0	0	0	1	0	0	0	29	32
New Haven	7	24	0	0	0	1	0	0	0	14	32
MIDDLE ATLANTIC											
New York:											
Buffalo	18	167	0	0	0	3	1	1	0	58	153
New York	290	801	0	0	0	113	7	2	2	180	1,617
Rochester	13	89	0	0	0	2	0	0	0	3	70
Syracuse	13	22	0	0	0	1	0	0	0	73	46
New Jersey:											
Camden	6	12	0	0	0	1	0	0	0	7	32
Newark	38	27	0	0	0	12	1	0	0	31	125
Trenton	6	2	0	0	0	3	0	0	0	13	29
Pennsylvania:											
Philadelphia	106	265	0	0	0	27	1	5	0	216	517
Pittsburgh	34	60	0	0	0	10	1	0	0	42	205
Reading	6	12	0	0	0	1	0	0	0	16	28
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	28	11	1	1	0	9	0	0	0	6	134
Cleveland	57	80	0	0	0	18	1	0	0	253	206
Columbus	12	6	1	0	0	1	0	0	0	14	75
Toledo	14	8	1	0	0	4	0	0	0	89	58
Indiana:											
Fort Wayne	5	1	0	0	0	0	0	0	0	5	27
Indianapolis	15	2	7	1	0	1	0	0	0	37	
South Bend	3	2	0	0	0	0	0	0	0	0	21
Terre Haute	2	0	0	0	0	0	0	0	0	0	21
Illinois:											
Chicago	143	205	2	0	0	50	2	0	1	147	815
Springfield	3	5	0	0	0	1	1	0	0	4	31
Michigan:											
Detroit	120	106	2	0	0	22	0	1	0	166	286
Flint	17	3	0	0	0	1	1	3	0	3	34
Grand Rapids	15	5	0	0	0	0	0	0	0	1	34
Wisconsin:											
Kenosha	2	8	0	0	0	0	0	0	0	0	8
Madison	5	4	0	0	0	0	0	3	0	8	
Milwaukee	37	29	1	0	0	7	0	0	0	118	114
Racine	4	0	0	0	0	0	0	0	0	0	15
Superior	3	1	0	0	0	0	0	1	0	1	2
WEST NORTH CENTRAL											
Minnesota:											
Duluth	10	2	0	0	0	1	0	0	0	1	22
Minneapolis	42	48	1	0	0	3	0	0	0	6	136
St. Paul	29	15	0	0	0	0	1	0	0	6	72

## City reports for week ended February 20, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport.....	2	14	1	0	-----	-----	0	0	-----	0	-----
Des Moines.....	7	2	2	0	-----	-----	0	0	-----	0	42
Sioux City.....	2	2	0	0	-----	-----	0	0	-----	0	-----
Waterloo.....	1	1	0	1	-----	-----	0	0	-----	4	-----
Missouri:											
Kansas City....	23	21	0	0	0	5	0	0	0	43	109
St. Joseph.....	3	3	0	0	0	0	0	0	1	2	16
St. Louis.....	48	26	2	0	0	14	1	0	0	98	215
North Dakota:											
Fargo.....	2	1	0	0	0	0	0	0	0	0	7
Grand Forks....	1	0	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	1	0	0	0	-----	-----	0	0	-----	0	-----
Sioux Falls.....	3	0	1	1	-----	-----	0	0	-----	0	7
Nebraska:											
Omaha.....	6	3	3	6	0	2	0	0	0	1	88
Kansas:											
Topeka.....	2	3	1	0	0	0	0	0	0	13	10
Wichita.....	4	2	1	0	0	0	0	0	0	0	34
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	3	0	0	0	0	0	0	0	9	34
Maryland:											
Baltimore.....	38	56	0	0	0	10	1	1	0	168	226
Cumberland.....	1	3	0	0	0	2	0	0	0	8	15
Frederick.....	0	3	0	0	0	0	0	0	0	3	3
District of Col.											
Washington.....	25	27	0	0	0	7	0	0	0	30	127
Virginia:											
Lynchburg.....	0	2	0	0	0	1	0	0	0	7	10
Norfolk.....	2	3	0	0	0	1	0	3	0	0	-----
Richmond.....	4	8	0	0	0	3	0	0	0	0	44
Roanoke.....	1	3	0	0	0	0	0	0	0	1	8
West Virginia:											
Charleston.....	1	0	1	0	0	1	0	0	0	2	18
Huntington.....	-----	0	-----	0	0	0	-----	0	0	0	-----
Wheeling.....	1	4	0	0	0	1	0	0	0	11	22
North Carolina:											
Raleigh.....	1	0	0	0	0	0	0	0	0	1	11
Wilmington.....	0	1	0	0	0	0	0	0	0	9	10
Winston-Salem....	2	2	0	0	0	2	0	0	1	20	15
South Carolina:											
Charleston.....	1	1	0	0	0	3	0	0	0	0	25
Columbia.....	0	0	0	0	0	1	0	0	0	1	31
Greenville.....	-----	1	1	0	0	0	-----	1	0	0	-----
Georgia:											
Atlanta.....	5	5	1	0	0	2	0	1	0	2	58
Brunswick.....	0	0	0	0	0	0	0	0	0	0	4
Savannah.....	1	0	0	0	0	3	0	2	0	2	26
Florida:											
Miami.....	2	3	0	0	0	0	1	0	0	0	19
Tampa.....	1	0	0	0	0	1	1	1	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	2	0	0	0	2	0	0	0	0	26
Lexington.....	-----	1	-----	0	0	2	-----	0	0	5	-----
Tennessee:											
Memphis.....	11	7	2	3	0	9	0	0	0	37	83
Nashville.....	3	0	0	0	0	3	0	0	0	8	39
Alabama:											
Birmingham....	2	3	1	0	0	4	0	0	0	4	67
Mobile.....	0	1	0	2	0	0	0	0	0	0	13
Montgomery.....	1	0	0	0	-----	-----	0	0	-----	0	-----

## City reports for week ended February 20, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-ported	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	2	0	0		0	0			1	
Little Rock	2	1	0	0	0	0	0	0	0	5	3
Louisiana:											
New Orleans	9	10	0	0	0	5	2	1	0	1	110
Shreveport	0	1	1	0	0	1	0	0	0	3	38
Oklahoma:											
Muskogee		0	2	0	0			0		0	
Oklahoma City	2	0	2	0	0	0	0	0	0	0	38
Texas:											
Dallas	6	7	2	0	0	2	0	0	0	2	53
Fort Worth	4	7	3	0	0	1	0	0	0	0	32
Galveston	0	0	0	0	0	2	1	0	0	0	14
Houston	4	5	5	2	0	6	0	0	0	0	80
San Antonio	2	0	0	0	0	9	0	0	0	0	89
MOUNTAIN											
Montana:											
Billings	0	0	1	0	0	0	0	0	0	0	7
Great Falls	4	2	0	0	0	0	0	0	0	0	12
Helena	0	0	0	0	0	0	0	0	0	3	5
Missoula	0	0	0	0	0	0	0	0	0	0	2
Idaho:											
Boise	1	0	0	0	0	6	0	0	0	0	5
Colorado:											
Denver	16	25	0	0	0	6	0	0	0	10	93
Pueblo	1	1	0	0	0	0	0	0	0	1	8
New Mexico:											
Albuquerque	1	1	0	0	0	1	0	0	0	0	10
Arizona:											
Phoenix	1	1	0	0	0	4	0	0	0	0	
Utah:											
Salt Lake City	3	2	0	0	0	2	0	0	0	0	37
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	10
PACIFIC											
Washington:											
Seattle	13	9	3	1			1	0		10	
Spokane	6	2	6	0			0	0		0	
Tacoma	3	2	2	0	0	1	0	0	0	7	25
Oregon:											
Portland	6	12	13	5	0	3	1	0	0	2	72
Salem	0	1	1	0			0	0		3	
California:											
Los Angeles	44	76	3	8	0	18	2	1	0	35	335
Sacramento	3	1	0	0	0	2	0	0	0	0	23
San Francisco	10	14	1	2	0	11	1	0	0	10	176

Division, State, and city	Meningococcus meningitis		Tetthargic encephalitis		Polioara		Polomyelitis (infantile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths	
<b>NEW ENGLAND</b>										
Massachusetts:										
Springfield		1	0	0	0	0	0	0	0	0
Connecticut:										
Hartford	1	6	0	1	0	0	0	0	0	0
New Haven	1	1	0	0	0	0	0	0	0	0



## City reports for week ended February 20, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo.....	1	1	0	0	0	0	0	0	0
New York.....	8	4	3	1	0	0	1	3	0
Rochester.....	1	0	0	0	0	0	0	0	0
New Jersey:									
Newark.....	1	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia.....	2	2	0	0	0	0	0	0	0
Pittsburgh.....	2	1	0	1	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	2	1	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	2	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	8	1	0	0	0	0	1	0	0
<b>WEST NORTH CENTRAL</b>									
Missouri:									
Kansas City.....	3	1	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	2	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	1	0	1	0	0	0	0	0
Virginia:									
Norfolk.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	0	0	0	0
Georgia:									
Atlanta.....	1	0	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	0	0	0	1	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	0	0	0	1	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	0	0	0	0	0
Shreveport.....	0	0	0	0	1	1	0	0	0
Oklahoma:									
Oklahoma City.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	2	1	0	0	0
Fort Worth.....	1	0	0	0	0	0	0	0	0
<b>MOUNTAIN</b>									
Montana:									
Billings.....	1	0	0	0	0	0	0	0	0
Great Falls.....	1	0	0	0	0	0	0	0	0
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
Arizona:									
Phoenix.....	0	0	0	1	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	1	0	0	0	0	0	0	0	0
Oregon:									
Portland.....	0	0	1	0	0	0	0	0	0
California:									
Los Angeles.....	0	2	0	0	0	0	0	0	0
San Francisco.....	2	0	0	0	0	0	0	1	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended February 20, 1932, compared with those for a like period ended February 21, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, January 17 to February 20, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931
98 cities.....	97	2 79	84	2 88	3 70	2 78	4 70	67	72	70
New England.....	50	106	96	106	48	84	5 65	75	108	89
Middle Atlantic.....	82	67	69	68	6 73	53	75	53	65	56
East North Central.....	97	93	68	110	79	96	71	85	57	78
West North Central.....	102	81	99	109	81	99	89	55	85	75
South Atlantic.....	108	2 65	120	2 73	84	2 75	59	59	88	77
East South Central.....	87	76	116	70	7 94	53	87	73	75	59
West South Central.....	260	81	204	183	152	156	168	118	158	132
Mountain.....	86	35	43	70	60	78	103	78	52	87
Pacific.....	99	88	63	45	72	69	2 78	49	47	57

## MEASLES CASE RATES

98 cities.....	346	2 405	334	2 418	2 418	2 473	2 453	521	533	703
New England.....	2,064	522	1,922	438	2,322	702	2,019	534	1,589	635
Middle Atlantic.....	134	251	149	306	228	353	253	308	384	645
East North Central.....	215	20	210	142	321	151	364	183	577	60
West North Central.....	180	1,964	114	1,521	172	1,489	182	1,314	197	874
South Atlantic.....	110	2 806	71	21,034	196	21,296	245	1,820	359	2,805
East South Central.....	17	795	23	916	70	1,034	17	604	12	1,051
West South Central.....	162	10	115	17	198	3	320	17	251	24
Mountain.....	609	757	509	496	294	1,123	198	687	138	1,210
Pacific.....	628	73	938	110	1,138	112	2 996	169	1,125	223

## SCARLET FEVER CASE RATES

98 cities.....	300	2 334	336	2 337	2 349	2 320	2 391	348	417	373
New England.....	640	575	614	510	705	734	2 634	693	738	606
Middle Atlantic.....	361	314	416	328	6 447	304	646	322	631	381
East North Central.....	312	384	388	377	325	331	385	375	356	364
West North Central.....	180	323	212	386	284	480	235	474	241	509
South Atlantic.....	218	2 343	214	2 313	245	2 905	239	320	231	304
East South Central.....	116	487	127	517	143	423	127	582	75	558
West South Central.....	82	142	92	112	106	89	49	105	86	125
Mountain.....	259	357	107	322	270	201	172	400	207	305
Pacific.....	128	120	89	143	116	145	2 120	123	128	145

## SMALLPOX CASE RATES

98 cities.....	6	2 16	5	2 17	2	2 23	44	18	4	20
New England.....	7	0	14	0	2	0	2	0	5	0
Middle Atlantic.....	0	0	0	0	6	0	0	0	0	0
East North Central.....	3	21	2	25	0	12	1	10	1	11
West North Central.....	13	77	11	84	9	151	11	84	13	123
South Atlantic.....	0	4	0	20	2	10	0	0	0	0
East South Central.....	23	20	6	18	10	29	6	12	20	23
West South Central.....	0	34	16	51	13	81	20	132	7	64
Mountain.....	34	9	9	0	0	44	17	0	0	9
Pacific.....	27	20	13	18	4	24	20	29	21	39

See footnotes at end of table.

*Summary of weekly reports from cities, January 17 to February 20, 1932—Annual rate per 100,000 population, compared with rates for the corresponding period of 1931—Continued*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 23, 1932	Jan. 24, 1931	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931
96 cities.....	7	<sup>2</sup> 6	5	<sup>2</sup> 5	<sup>2</sup> 5	<sup>2</sup> 4	<sup>4</sup> 6	3	3	7
New England.....	2	2	2	5	2	2	<sup>1</sup> 2	2	0	5
Middle Atlantic.....	4	3	7	2	<sup>6</sup> 4	1	3	2	4	6
East North Central.....	3	3	1	1	4	2	2	1	3	3
West North Central.....	4	10	6	13	2	2	9	2	0	11
South Atlantic.....	29	<sup>2</sup> 14	16	<sup>2</sup> 8	4	<sup>1</sup> 18	16	0	10	22
East South Central.....	12	12	17	18	<sup>7</sup> 31	6	58	29	0	6
West South Central.....	23	27	3	14	23	24	3	14	3	14
Mountain.....	0	17	0	0	0	0	0	0	0	0
Pacific.....	11	6	2	10	4	0	<sup>1</sup> 13	10	2	4

## INFLUENZA DEATH RATES

91 cities.....	12	<sup>2</sup> 52	13	<sup>2</sup> 70	<sup>2</sup> 13	<sup>2</sup> 61	<sup>4</sup> 18	59	20	60
New England.....	7	12	5	34	10	46	<sup>1</sup> 17	46	7	24
Middle Atlantic.....	8	91	9	102	<sup>6</sup> 8	68	13	49	13	40
East North Central.....	10	18	11	36	12	52	15	56	18	61
West North Central.....	6	29	3	29	12	35	26	56	49	74
South Atlantic.....	24	<sup>2</sup> 38	14	<sup>2</sup> 127	16	<sup>2</sup> 129	18	119	18	79
East South Central.....	44	64	50	76	<sup>7</sup> 41	64	44	64	25	76
West South Central.....	13	83	37	100	30	73	44	159	50	45
Mountain.....	26	44	52	52	52	52	60	17	78	17
Pacific.....	14	22	9	14	12	12	<sup>1</sup> 7	14	14	41

## PNEUMONIA DEATH RATES

91 cities.....	120	<sup>2</sup> 229	109	<sup>2</sup> 259	<sup>1</sup> 119	<sup>2</sup> 231	<sup>4</sup> 134	218	154	212
New England.....	113	178	113	185	144	286	<sup>1</sup> 118	291	120	226
Middle Atlantic.....	126	332	111	369	<sup>6</sup> 103	293	124	254	162	217
East North Central.....	79	126	90	176	96	175	108	182	133	192
West North Central.....	154	171	113	159	160	136	244	124	285	218
South Atlantic.....	186	<sup>2</sup> 281	114	<sup>2</sup> 345	165	<sup>2</sup> 325	174	348	163	313
East South Central.....	107	290	125	229	<sup>7</sup> 157	178	182	166	144	274
West South Central.....	165	245	125	204	172	214	121	176	165	221
Mountain.....	147	157	138	200	215	209	172	183	198	191
Pacific.....	123	103	116	115	100	72	<sup>1</sup> 154	72	91	91

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Columbia, S. C., not included.

<sup>3</sup> Trenton, N. J., and Covington, Ky., not included.

<sup>4</sup> Barre, Vt., and San Francisco, Calif., not included.

<sup>5</sup> Barre, Vt., not included.

<sup>6</sup> Trenton, N. J., not included.

<sup>7</sup> Covington, Ky., not included.

<sup>8</sup> San Francisco, Calif., not included.

# FOREIGN AND INSULAR

## CANADA

*Provinces—Communicable diseases—Week ended February 13, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended February 13, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Polio-myelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....	.....	.....	.....	.....	.....	.....
Nova Scotia.....	.....	13	.....	.....	.....	.....
New Brunswick <sup>1</sup> .....	.....	.....	.....	.....	.....	.....
Quebec.....	.....	.....	.....	3	.....	6
Ontario.....	2	5	1	.....	4	2
Manitoba.....	.....	.....	.....	1	.....	2
Saskatchewan <sup>1</sup> .....	.....	.....	.....	.....	.....	.....
Alberta.....	.....	.....	.....	.....	.....	3
British Columbia.....	.....	.....	.....	.....	8	1
Total.....	2	18	1	4	12	14

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Ontario—Communicable diseases—Years 1931 and 1930.*—Certain communicable diseases were reported in the Province of Ontario, Canada, for the years 1931 and 1930, as follows:

Disease	1931		1930	
	Cases	Deaths	Cases	Deaths
Actinomycosis.....	1	.....	.....	.....
Cerebrospinal meningitis.....	70	25	120	48
Chancroid.....	10	.....	26	1
Chicken pox.....	8,973	.....	9,477	3
Conjunctivitis.....	5	.....	1	.....
Diphtheria.....	2,368	107	3,198	130
Dysentery.....	24	13	10	26
Erysipelas.....	19	.....	14	1
German measles.....	635	.....	3,430	.....
Gonorrhea.....	2,795	.....	2,422	.....
Influenza.....	479	94	316	65
Jaundice.....	46	.....	.....	.....
Lethargic encephalitis.....	12	12	16	14
Malaria.....	1	.....	.....	.....
Measles.....	7,952	6	13,617	9
Mumps.....	5,034	2	2,311	.....
Paratyphoid fever.....	650	10	35	1
Pneumonia.....	.....	1,641	.....	1,796
Polio-myelitis.....	161	12	671	61
Puerperal fever.....	1	.....	9	8
Scarlet fever.....	5,955	28	7,831	38
Septic sore throat.....	106	7	365	9
Smallpox.....	230	.....	647	.....
Syphilis.....	2,114	11	2,223	4
Tetanus.....	3	4	.....	6
Trachoma.....	.....	.....	2	.....
Trench mouth.....	15	.....	.....	.....
Tuberculosis.....	1,720	589	1,628	661
Tularaemia.....	7	.....	.....	.....
Typhoid fever.....	766	42	633	30
Undulant fever.....	143	1	75	1
Whooping cough.....	4,653	33	3,712	14

*Quebec Province—Communicable diseases—Week ended February 13, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended February 13, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	68	Poliomyelitis.....	3
Diphtheria.....	36	Scarlet fever.....	75
Erysipelas.....	6	Tuberculosis.....	41
German measles.....	2	Typhoid fever.....	6
Measles.....	414	Whooping cough.....	43

*Quebec Province—Vital statistics—December, 1931.*—The Bureau of Health of the Province of Quebec, Canada, reports births, marriages, and deaths, with deaths from certain causes, for the month of December, 1931, as follows:

Estimated population.....	2,870,000	Deaths from—Continued.	
Births.....	6,362	Lethargic encephalitis.....	1
Birth rate per 1,000 population.....	26.9	Measles.....	9
Marriages.....	956	Nephritis.....	189
Deaths.....	2,710	Pneumonia.....	224
Death rate per 1,000 population.....	11.5	Poliomyelitis.....	7
Deaths under 1 year.....	648	Puerperal state.....	24
Deaths under 1 year per 1,000 births.....	101.9	Scarlet fever.....	16
Deaths from—		Syphilis.....	12
Cancer.....	207	Traffic.....	22
Cerebrospinal meningitis.....	1	Tuberculosis, pulmonary.....	191
Diabetes.....	31	Tuberculosis, other forms.....	49
Diarrhea.....	141	Typhoid fever.....	23
Diphtheria.....	40	Violence.....	60
Heart disease.....	330	Whooping cough.....	15
Influenza.....	56		

*Quebec Province—Vital statistics—Years 1931, 1930, and 1929.*—The Bureau of Health of the Province of Quebec, Canada, reports births, deaths, and marriages, with birth and death rates, for the years 1931, 1930, and 1929, as follows:

	1931	1930	1929
Births.....	83,451	83,025	81,380
Birth rate.....	29.1	29.7	29.4
Marriages.....	16,700	18,543	19,610
Deaths.....	34,487	35,945	37,221
Death rate.....	12.0	12.8	13.5
Deaths under 1 year.....	9,482	10,045	9,810
Deaths under 1 year per 1,000 births.....	113.6	120.1	120.6

The following table shows the number of deaths from certain causes in Quebec Province for the three years, together with the death rates per 100,000 population for these causes.

Cause of death	Number of deaths	Death rate per 100,000 population	Cause of death	Number of deaths	Death rate per 100,000 population
<b>Tuberculosis:</b>			<b>Heart disease:</b>		
1931.....	3,047	106.2	1931.....	3,507	122.2
1930.....	3,350	118.8	1930.....	3,388	120.2
1929.....	3,286	118.7	1929.....	3,286	118.7
<b>Cancer:</b>			<b>Violence:</b>		
1931.....	2,375	82.8	1931.....	1,582	55.1
1930.....	2,346	83.2	1930.....	1,652	59.0
1929.....	2,131	77.0	1929.....	1,542	55.7

## ITALY

*Communicable diseases—Four weeks ended August 23, 1931.*—During the four weeks ended August 23, 1931, certain communicable diseases were reported in Italy, as follows:

Disease	July 27-Aug. 2		Aug 3-9		Aug 10-16		Aug. 17-23	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	41	36	75	57	68	48	60	48
Cerebrospinal meningitis.....	2	2	4	4	4	4	3	3
Chicken pox.....	54	35	61	41	48	37	48	33
Diphtheria and croup.....	356	214	364	216	309	190	284	179
Dysentery.....	70	30	58	27	62	31	65	22
Lethargic encephalitis.....	3	3	3	8			1	1
Measles.....	503	173	629	188	439	142	331	128
Polio-myelitis.....	20	9	27	21	16	15	33	18
Scarlet fever.....	257	113	320	120	220	99	201	101
Typhoid fever.....	1,133	537	1,176	540	983	521	952	505
Typhus fever.....							1	1

## SWEDEN

*Malmo—Smallpox.*—According to information dated February 12, 1932, there was a small epidemic of smallpox in Malmo, Sweden. The first case, which was infected while returning to Sweden from a foreign country, was observed early in January, and 11 cases had occurred up to January 28. Vaccination was being carried on on a large scale, effort being made particularly to vaccinate all those persons who had had contact with the patients. No new cases had been reported since February 1.

## TRINIDAD

*Port of Spain—Vital statistics—January, 1931 and 1932.*—The following statistics for the months of January, 1931 and 1932, are taken from a report issued by the public health department of Port of Spain, Trinidad.

	January, 1931	January, 1932
Number of births.....	175	168
Birth rate per 1,000 population.....	30.6	28.2
Number of deaths.....	94	106
Death rate per 1,000 population.....	16.4	17.8
Deaths under 1 year.....	14	22
Deaths under 1 year per 1,000 births.....	80.0	130.9







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

## CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place	August, 1931	Sep- tember, 1931	Octo- ber, 1931	November, 1931			December, 1931			January, 1932			Feb. 1-10, 1932
				1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	
Indo-China (French) (see also table above):													
Cambodia 1.....	C	12	14	19	3	1	2	1	1	9	2	3	3
.....	D	2	7	18	—	—	1	1	1	2	2	2	2
.....	C	39	16	14	5	1	8	3	3	1	2	2	P
Cochin-China 1.....	D	32	13	13	4	—	5	2	—	1	1	2	2

<sup>1</sup> Reports incomplete.

## PLAGUE

Place	Aug. 23- Sept. 19, 1931	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Week ended—											
				November, 1931							December, 1931				
				21	28	5	12	19	26	1	2	9	16	23	30
Argentina: Cordoba Province <sup>1</sup> .....	C														
Azores:.....															
San Miguel Island.....	C			2	3										
.....	C			1	1										
Terceira Island.....	C			9	7										
.....	C			4	2										
Belgian Congo.....	C														
British East Africa (see also table below):															
Tanganyika.....	C	4	13												
.....	D	4	6												
Uganda.....	C	289	275	218	41	38	31	28	13	9	13				
.....	C	207	270	211	39	35	30	34	15	10	13				
Canary Islands: Palma Island—Los Llanos.....	C											8			
.....	C											5			
.....	D											3			
Ceylon: Colombo.....	C	3	4	4	1	1	1	1	1	1	1	4	1	2	1
.....	D	3	3	4	1	1	1	1	1	1	1	4	1	2	1



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

## PLAGUE—Continued

[O indicates cases; D, deaths; P, present]

Place	Aug. 23- Sept. 19, 1931	Sept. 19- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Week ended—											
				November, 1931			December, 1931			January, 1932			February, 1932		
				21	28	5	12	19	26	2	9	16	23	30	6 13 20
India—Continued.															
Madras Presidency.....	376	185	91	26	31			30	76	63					22
.....	162	105	40	14	10			3	26	30					14
Moulmein.....	5														
.....	9	2	5	1	1				1	1	1	1	2	2	1
Rangoon.....	3		1	1	1				1	1	1		1		
.....	2		1	1	1				1	1	1		1		
.....	4	4	1				1		1	1					
Plague-infected rats.....															
Indo-China (see table below).															
Iraq:															
Baghdad.....	3		2	1	2	1	3	1			1	2	1	1	1
.....	1			1	1	1	1								
Mandhan.....			3	1	1										
.....			1	1	1										
Madagascar (see also table below): Tamatave.....	2	1							1						
.....															
Morocco.....	2	18	2			11									
.....		8	6												
Pern (see table below).															
Senegal (see table below).															
Siam.....	4	4	5	1	3	1	1	1				1			
.....	3	3	2	1	1	1	1	1				1			
Spain: Hospitalet—Barcelona Province.....	2	2	1	2	1										
.....	1	1	1	1	1										
Syria: Beirut.....	2	3	1												
Tunisia: Tunis.....	1	1	1												
Union of South Africa: Orange Free State.....	P	P		P						P					



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX

[O Indicates cases; D, deaths; P, present]

Place	Aug 23- Sept 19, 1931	Sept 20-Oct. 17, 1931	Oct 18- Nov. 14, 1931	Week ended—													
				November, 1931			December, 1931			January, 1932			February, 1932				
				21	28	5	12	19	26	2	9	16	23	30	6	13	20
Aden.....																	
Algeria.....	C																
Algers.....	C																
Constantine.....	C	1		1												2	
Brazil:																	
Porto Alegre (alastrim).....																	
Santos.....	D	48	46	57	9	8	15	19	14								
Rio de Janeiro.....	D	4	2	3			1		1								
British East Africa. Tanganyika.....	C																
British East Africa. Tanganyika.....	C																
British East Africa. Tanganyika.....	C																
British South Africa: Northern Rhodesia.....	D	50	1, 184	18	2												
British South Africa: Northern Rhodesia.....	D	5	97	2													
Southern Rhodesia.....	C																
Canada:																	
Alberta.....	C	3	1														
British Columbia.....	C		12	6		2	1		9								
British Columbia.....	C	2		2													
Manitoba.....	C	1			1												
Winnipeg.....	C	1															
Nova Scotia.....	C																
Ontario.....	C	6	17	15	3	2	5	1	10								
Kingston.....	C	1															
North Bay.....	C																
Ottawa.....	C	1	8	12													
Toronto.....	C																
Quebec.....	C																
Saskatchewan.....	C	33	11	33	12	5	9	8									
Saskatchewan.....	C		2														
Regina.....	C																
Chile:																	
Santiago.....	C			3													
Santiago.....	C			2													
Tocopilla.....	D																













**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	July, 1931	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	No- vem- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932
Chosen: Seoul.....	C	1	33	12	24	4	
Czechoslovakia.....	D	1	5		18	1	
Greece.....	D	2	13	9	12	4	10
Guatemala.....	D	34	2	1			6
	D	5	3			1	1

## YELLOW FEVER

[illegible]





UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

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## ===== SPECIAL ARTICLES =====

Prevalence of Communicable Diseases in the United States  
Construction and Use of Impinger Dust Sampling Apparatus



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

THE PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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# PUBLIC HEALTH REPORTS

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## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES <sup>1</sup>

January 31–February 27, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports, under the section entitled "Prevalence of Disease".

*Influenza.*—There was a sharp increase of influenza cases from 6,909 cases reported for the 4-week period ended January 30 to 25,207 for the current period. All regions showed very significant increases except the New England and Middle Atlantic, where the incidence very closely approximated the incidence for the preceding 4-week period.

For the country as a whole the influenza incidence for the current period, although showing considerable increase, which may be expected at this season, was still about 40 per cent below the incidence for the same period last year and almost 60 per cent lower than in 1929. The disease was, however, more than twice as prevalent as for the corresponding period in 1930—a more nearly normal year. The disease was unusually prevalent in the West North Central and Mountain and Pacific areas. In the former area 2,280 cases were reported for the current period, as compared with 1,102, 218, and 1,455 for the same period in 1931, 1930, and 1929, respectively; and in the latter area, 9,719 cases were reported as compared with 1,968, 687, and 1,505 in the years 1931, 1930, and 1929, respectively.

*Poliomyelitis.*—The incidence of poliomyelitis showed a very slow decline, dropping from 156 cases for the preceding 4-week period to 130 for the current period. For this same period in 1931, 1930, and 1929 there were 96, 79, and 68 cases, respectively, making the incidence this year the highest of the four years. A comparison of

<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The numbers of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

geographic areas shows that in the New England and Middle Atlantic States the number of cases this year was 2.4 times the number for the same period last year; in the East North Central group the number of cases was 1.8 times the number last year; and in the South Atlantic group the number was 1.6 times last year's figure. In the West North Central group the number of cases was 5 for the current period against 12 last year, and in the South Central and Mountain and Pacific groups the number very nearly approximated last year's figure for the corresponding period.

*Typhoid fever.*—For the 4-week period ended February 27 the number of cases of typhoid fever was 794, as compared with 580, 650, and 512 for the same period in the years 1931, 1930, and 1929, respectively. A low incidence, however, was still maintained in the West North Central and Mountain and Pacific areas, the number of cases in those areas being the lowest in four years. On the other hand, the South Central, South Atlantic, and East North Central areas reported the highest number of cases in four years. In the New England and Middle Atlantic States the incidence was not far from the average of the three preceding years.

*Scarlet fever.*—For the country as a whole the number of cases of scarlet fever (23,442) reported during the four weeks ended February 27 was approximately the same as that reported for the corresponding period last year. The incidence also compared very favorably with the incidence in 1930 and 1929, the number of cases for the current period being but little in excess of the number reported for the same period in either of those years. A comparison of geographic areas shows that the disease was less prevalent during the current period than at the same time last year in all areas except the New England and Middle Atlantic. In those groups of States the number of cases (12,117) was 1.4 times the number reported for the same period last year and was the highest number reported for the corresponding period in four years. The decreases as compared with last year in the other regions ranged from 10 per cent in the South Central groups to 43 per cent in the West North Central group.

*Smallpox.*—The number of cases of smallpox reported for the current period was 1,402, approximately 700 less than was reported for the preceding 4-week period—a decline somewhat greater than would ordinarily be expected during this period. All regions except the South Atlantic shared in the lower incidence. North Carolina reported 16 cases for the current period, as compared with 7 for the preceding period, which seemed responsible for a slight increase in that group. In the New England and Middle Atlantic region Massachusetts reported a drop from 40 cases during the preceding week to 3 for the current week, but the disease still remained unusually prevalent in

Vermont and Connecticut. In relation to previous years all sections of the country, except the New England and Middle Atlantic States, maintained the lowest level that has been reached in four years. The unusual appearance of smallpox in several States in the New England and Middle Atlantic sections has kept the incidence in that group considerably above that of the corresponding period in the three preceding years.

*Meningococcus meningitis.*—The number of cases of meningococcus meningitis continued to be the lowest in four years. For the 4-week period ended February 27 the number of cases totaled 327, as compared with 588, 1,011, and 938 for the corresponding period in the years 1931, 1930, and 1929, respectively. The low incidence was very general, the decreases ranging in the various geographic areas from 25 per cent in the East North Central group to 60 per cent in the South Atlantic group.

*Diphtheria.*—There were 5,139 cases of diphtheria reported for the current 4-week period, approximately 1,600 less than in the preceding period. All areas shared in the lowered incidence. A comparison with previous years shows that for the total reporting area the number of cases was still about 13 per cent in excess of last year's figure. The number was, however, considerably lower than for the corresponding period in 1930 and 1929. Only in the North Central group was the disease less prevalent during the current period than at the same time last year.

*Measles.*—The incidence of measles increased about 40 per cent during the current 4-week period over the preceding period. All regions contributed to this expected seasonal increase. The current figure (38,393) very closely approximated the average incidence for preceding years. The New England and Middle Atlantic States continued to report the highest incidence of measles in four years. The number of cases in the North Central and South Atlantic regions showed a drop of approximately 50 per cent from last year's figure, and in the South Central States the number of cases (793) was only 20 per cent of the incidence for the same period last year.

*Mortality, all causes.*—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, was the same for the current period as for the preceding 4-week period, viz, 12.3 per thousand population (annual basis). In relation to recent years the current mortality was the lowest recorded in seven years.

## THE IMPINGER DUST SAMPLING APPARATUS AS USED BY THE UNITED STATES PUBLIC HEALTH SERVICE

By LEONARD GREENBURG, *Sanitary Engineer*, and J. J. BLOOMFIELD, *Sanitary Engineer, Office of Industrial Hygiene and Sanitation, United States Public Health Service*

### INTRODUCTION

The important rôle of atmospheric dust in the causation of pulmonary fibrosis has for a long time been recognized by students of industrial hygiene and the occupational diseases.<sup>1</sup> The United States Public Health Service and the United States Bureau of Mines became interested in this problem in 1914, and in 1915 published the first report of their joint study made among the hard-rock miners of the Joplin (Mo.) district.<sup>2</sup>

The recognition of inhaled dust as the factor of chief importance in the production of pulmonary disease among miners emphasized the significance of the quantitative aspects of this problem. Thus methods for the sampling and estimation of the quantity of dust in air began to receive the attention of workers in this field. The South African investigators began using the sugar tube method for the sampling of atmospheric dust in 1911,<sup>3</sup> and Lanza and Higgins in the Joplin study previously referred to also availed themselves of the same technique. In fact, no other suitable method was then available. In 1912 the Committee on Standard Methods for the Examination of Air of the American Public Health Association recommended the sugar tube as the standard method for the sampling of atmospheric dust.

This method of dust sampling had several drawbacks, the chief of which were its slow sampling rate (the American Public Health Association Committee sampled 5 cubic feet in 18 minutes) and the fact that the sugar always contained a certain quantity of dust which introduced a variable, and sometimes considerably doubtful, element into the final results.

To overcome the limitations of the sugar tube method, various investigators attempted to devise other procedures for the sampling and analysis of atmospheric dust. One of the most fruitful studies was that of Palmer,<sup>4</sup> who in 1916 presented his water-spray apparatus for sampling dust. This method was adopted in 1917 by the Committee on Standard Methods of the American Public Health Association and was recommended as the standard technique for the sampling

<sup>1</sup> For a summary of this subject the reader is referred to a paper by H. S. Willis, entitled "Pneumonococcosis and tuberculosis." *Medicine*, 9, Dec. 1930.

<sup>2</sup> Lanza, A. J., and Higgins, Edwin: Pulmonary disease among miners in the Joplin District, Missouri, and its relation to rock dust in the mines. U. S. Bureau of Mines Technical Paper 105. 1915.

<sup>3</sup> General Report of the Miners' Phthisis Prevention Committee. Pretoria, 1916. Page 66.

<sup>4</sup> Palmer, G. T.: A new sampling apparatus for the determination of aerial dusts. *American Journal Public Health*, vol. 6, 1916, pp. 54-55.

of dust in air. The United States Public Health Service began employing this apparatus in 1918 in its studies of dust in air.

In 1916 the South African investigators, desirous of obtaining a more portable type of instrument and one which would yield results more rapidly, described a new instrument known as the Kotzé konimeter.<sup>5</sup> In this instrument a small volume of air, approximately 10 cubic centimeters, is impinged at a high velocity (30 to 80 meters per second) against the surface of a vaseline-coated glass plate, the vaseline serving to retain the particles of dust after they strike the plate. The plate is then removed and placed under the microscope, the adherent dust being counted at a suitable magnification. The United States Bureau of Mines, which had been using the sugar tube method for dust sampling, began at once to study the performance of this new instrument.

In 1922 the instruments mentioned were the ones in most common use. In addition, however, the United States Bureau of Chemistry,<sup>6</sup> in its dust-explosion work, employed an apparatus which consisted essentially of an adapter for holding a Whatman filter paper thimble through which air was drawn by a suction pump, thus sampling the atmospheric dust. By the difference in weight of the paper thimble before and after dust sampling, the weight of the dust was easily determined. Finally, mention should be made of the Anderson and Armspach<sup>7</sup> dust determinator which, in 1922, was in use by the American Society of Heating and Ventilating Engineers. This instrument measured the loss of pressure incident to forcing air through a piece of filter paper; this rate of loss of pressure was then regarded as a measure of the air dustiness.

Very briefly such was the status of the technique of atmospheric dust sampling in the year 1922, when it became apparent that the various dust-sampling methods did not yield results which could be regarded as absolute or even comparable. In fact, sampling in a given industry, by different methods, usually gave findings which were not of the same order of magnitude. As a result, a conference of interested persons was held at the United States Bureau of Mines Experiment Station, Pittsburgh, Pa., in 1922. It was decided at that time to conduct a laboratory study of dust-sampling instruments.

The study was started in the summer of 1922 at the Pittsburgh Experiment Station. Suspensions of dust (five different powdered substances were used) were set up in an air-tight chamber and simultaneous samplings were carried out at first with the sugar tube, the

<sup>5</sup> Final Report of the Miners' Phthisis Prevention Committee, Union of South Africa, Mar. 10, 1919.

<sup>6</sup> Trostel, L. J., and Frevert, H. W.: Collection and Examination of Explosive Dusts in Air. *Journal of Industrial and Engineering Chemistry*, vol. 15, March, 1923, pp. 232-236.

<sup>7</sup> Anderson, F. P., and Armspach, O. W.: A new method of making air-dust determinations. *Journal American Society Heating and Ventilating Engineers*, vol. 28, July, 1922, pp. 533-544.

Palmer apparatus, the konimeter, the filter-paper thimble, and the dust determinator.

During the course of the study, a new instrument, the impinger, for the sampling of dust, was devised by one of the authors and G. W. Smith, then of the United States Bureau of Mines.<sup>8</sup> This new instrument was included in the later stages of the laboratory study of dust-sampling instruments described in the report published as Public Health Bulletin No. 144.<sup>9</sup>

In this instrument, the air to be sampled is drawn through a glass tube and impinged at a high velocity on a glass plate which is kept beneath the surface of the water or other suitable fluid in the collecting flask. The dust is momentarily arrested, wetted by the collecting fluid, and in this manner trapped. After a sufficient volume of air has been sampled, a portion of the collecting fluid is removed to a suitable counting chamber or cell for microscopic count to ascertain the number of particles in a manner to be described later. The remaining portion of the sample may be subjected to any desired analysis.

In the comparative study, the dust-catching efficiency of the impinger was found to be high. Consequently, its physical principles and characteristics were the object of a special study, and finally a satisfactory and practical form of dust-sampling instrument, based on this principle, was evolved.

The apparatus (essentially in its present form), as described in Public Health Bulletin No. 144, possessed an efficiency of 94 to 97.5 per cent when sampling a finely-divided silica dust suspension at the rate of 1 cubic foot per minute. The tests used in estimating this efficiency were conducted by an optical method in which a portion of the dusty air being delivered to the collecting device was diluted with measured amounts of dust-free air until a "match" was obtained on comparison with the stream of air emerging from the dust-collecting device. The comparison, or matching, consisted in producing equal Tyndall effects (equal amounts of reflected light) by the two dust streams when they are simultaneously observed in a beam of light.

So far as the quantitative results of the dust-sampling instruments are concerned, the conclusion of the comparative study was as follows: "Considering the dust caught by the Palmer as unity, the instruments take the following order: On basis of numbers of particles determined—impinger, 5.0; sugar tube, 2.1; and Palmer apparatus, 1.0. On basis of weight of dust determined—impinger, 2.1; thimble,

<sup>8</sup> Greenburg, L., and Smith, G. W. A new instrument for sampling serial dusts. Bureau of Mines Reports of Investigations No. 2392, September, 1922.

<sup>9</sup> Katz, S. H., Smith, G. W., Myers, W. M., Trostel, L. J., Ingels, Margaret, and Greenburg, L.: Comparative tests of instruments for determining atmospheric dusts. Public Health Bulletin No. 144, January, 1925.

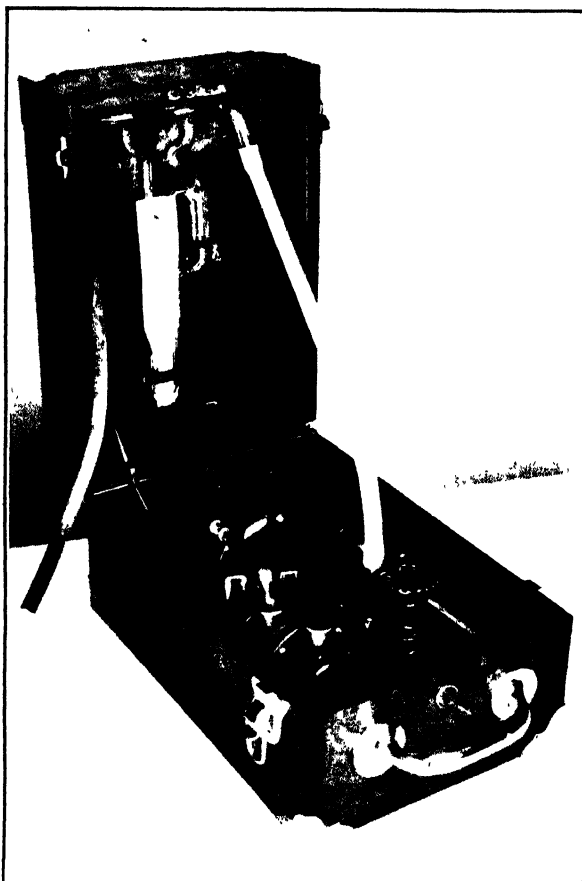


FIGURE 1.—Electrically driven suction apparatus for impinger

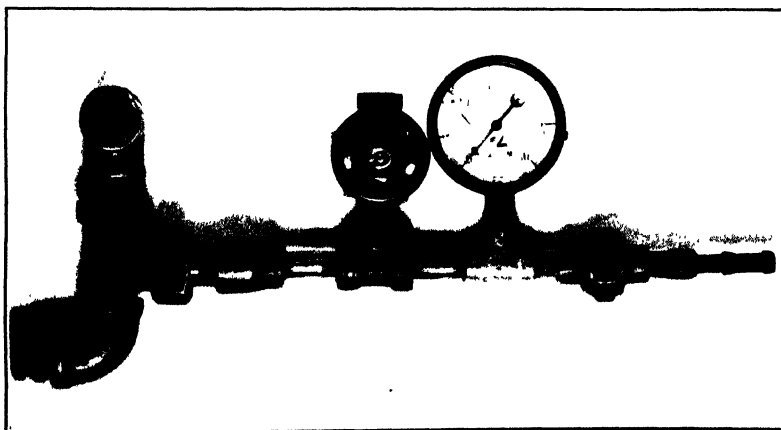


FIGURE 2.—Compressed-air driven suction apparatus for impinger



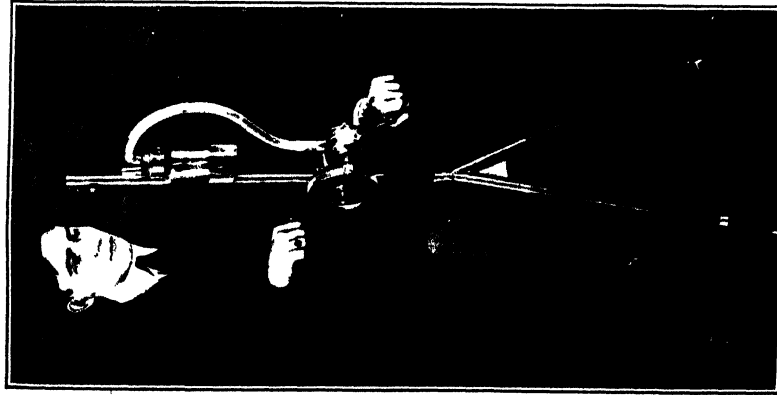


FIGURE 3.—Hand-driven suction apparatus.

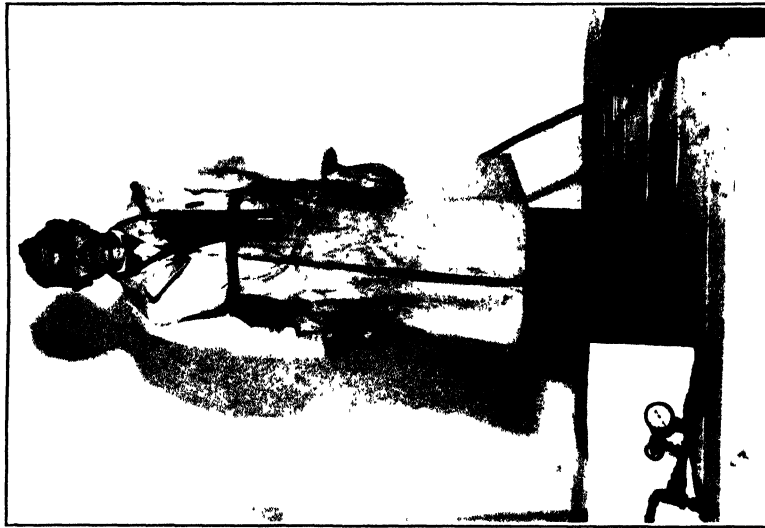


FIGURE 4.—Impinger sampling cylinder attached about neck of wearer.

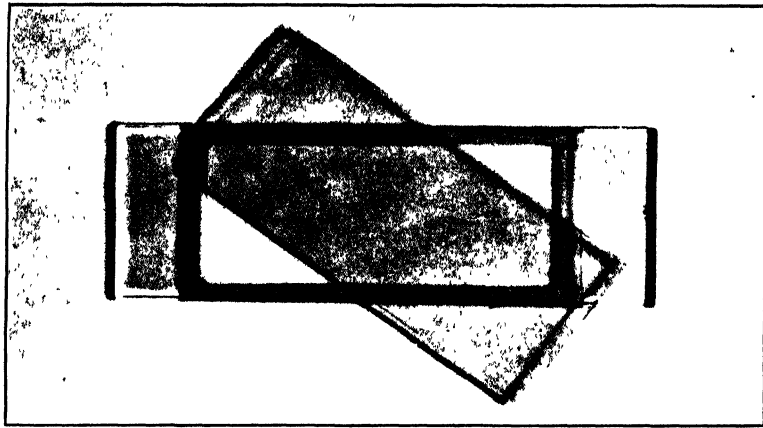


FIGURE 5.—Sedgewick-Rafter counting cell.

1.5; sugar tube, 1.6; Palmer apparatus, 1.0." These results have led to the selection of the impinger as the most efficient apparatus for all round industrial dust sampling. The instrument has been used in a number of studies in the dusty trades, in the studies of lead tetraethyl and many other investigations to be mentioned later. Nine years of field experience with the impinger apparatus have given confirmatory evidence of its value as a dust-sampling device.

We have developed several modifications of the apparatus to meet the special requirements of certain problems. The present contribution has been prepared for the purpose of describing the various forms of the instrument in such a detailed manner that the apparatus may be built for anyone requiring its use

#### APPARATUS AS AT PRESENT IN USE

The impinger apparatus consists essentially of two portions: First, a source of sufficient suction to draw the air to be sampled through the sampling device; and second, the sampling device or impinger itself, which consists of a container and the impinger tube and plate. As a source of suction, an electrically-driven and a compressed-air-driven apparatus have been designed. A hand-driven apparatus developed at the United States Bureau of Mines will also be described.

#### ELECTRIC SUCTION APPARATUS

The electrically driven suction apparatus is designed to be used in places where electrical energy is available. A photograph of the apparatus is shown in Figure 1 (Pl. I), and the mechanical details are presented in Figures 6, 7, and 8. The motor is a series-wound, single-phase, 60-cycle, alternating-current motor of one-fifteenth horsepower, rated at 1.6 amperes, at 110 volts, with a speed of 1,800 revolutions per minute. This motor, being series-wound, operates on either alternating or direct current. The motor is geared to a positive pressure blower of the Roots type by means of a set of gears having a 1 to 3 ratio. In order to minimize noise, the smaller of these gear wheels is made of fiber, the larger being metal. The blower is rated at 4 cubic feet of free air per minute when rotated at a speed of 600 revolutions per minute, and is used as a source of suction rather than as a source of air pressure. Wired in series with the electric motor is a 98-ohm, 1.6-ampere variable sliding rheostat used for speed control of the motor. By employing such a rheostat a voltage of 110 or 220 volts may be used. To the intake or suction side of the blower is attached a  $\frac{1}{4}$ -inch malleable-iron elbow fitting provided with two inlets. To one of the inlets a  $\frac{1}{4}$ -inch brass needle valve is attached, which serves as a by-pass in regulating the rate of suction. The second inlet of the elbow is connected to a constriction-

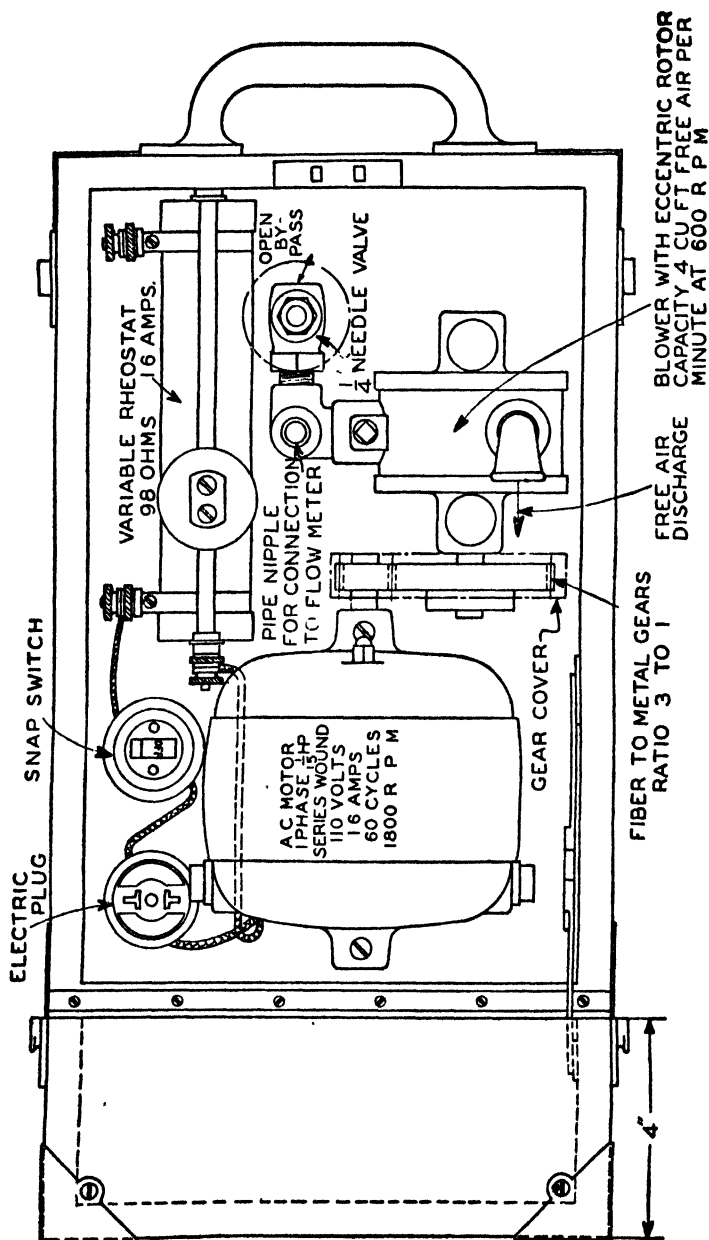


FIGURE 6.—Drawing of electrically driven suction apparatus, top view

type glass flowmeter, by means of a suitable length of noncollapsible rubber tubing; the flowmeter is fastened on the inside of the lid of the carrying case. The inlet side of the flowmeter is connected to the sampling flask by means of a second piece of noncollapsible rubber tubing. The latter piece of rubber tubing may be of any suitable length. The flowmeter scale is calibrated in a manner to be described later. A vacuum gauge may be used instead of a flowmeter as a measuring device for the air flow.

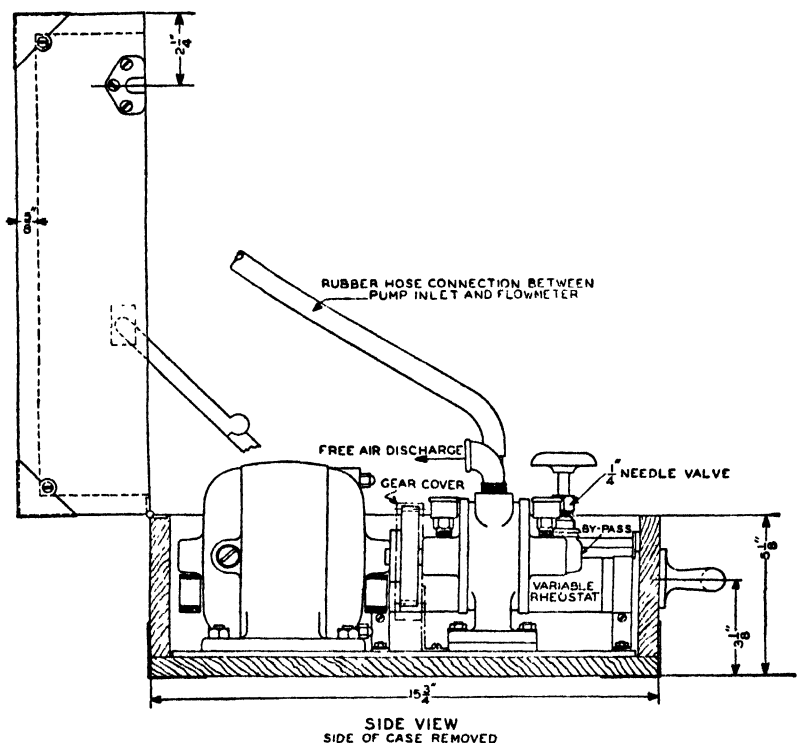


FIGURE 7.—Drawing of electrically driven suction apparatus, side view

The electric motor, blower, sliding rheostat, electric plug, and switch are all assembled on a metal plate 9 by 14 inches and one-eighth inch in thickness, and this plate is in turn firmly screwed to the base of the carrying case. The carrying case is made of  $\frac{1}{2}$ -inch quartered oak, the outside dimensions being  $10\frac{1}{2}$  by  $15\frac{1}{2}$  by  $9\frac{1}{4}$  inches. The weight of the apparatus is 45 pounds.

#### COMPRESSED-AIR SUCTION APPARATUS

In many industrial establishments, mines, and quarries, compressed air is readily available. By means of a very simple device called an ejector, the energy of the compressed air may be con-

verted into suction and then utilized with the impinger tube and flask for the sampling of the dust in air. We have constructed such an apparatus and have found it successful for the purpose intended.

A photograph of this apparatus is shown in Figure 2 (Pl. I), and in Figure 9 is presented a working drawing showing the component parts of the apparatus.

The inlet (compressed-air) side of the ejector is provided with an adapter so that the usual  $\frac{1}{4}$ -inch nipple, as ordinarily used for small

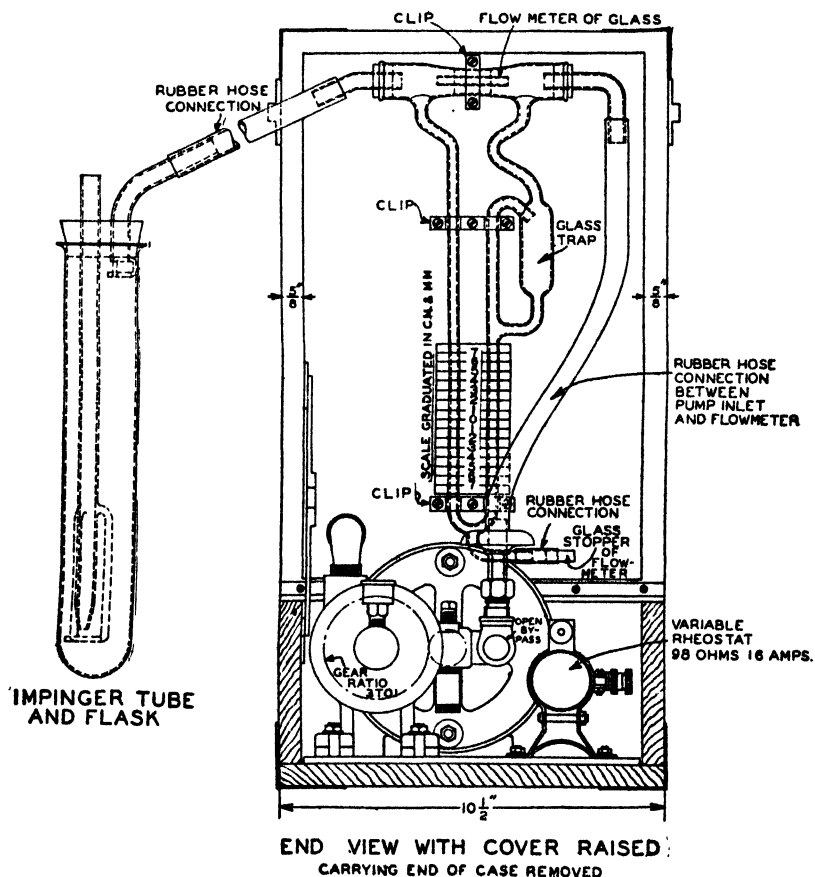


FIGURE 8.—Drawing of electrically driven suction apparatus, end view

compressed-air lines, may readily be attached. To the suction side of the ejector a  $\frac{1}{4}$ -inch iron tee is attached, and to the outstanding leg of this tee a  $\frac{1}{4}$ -inch brass needle valve is secured. To the other leg of this tee a second tee connection is fitted. To the outstanding leg of the second tee, an ordinary vacuum gauge is connected, while to the other leg there is attached an ordinary  $\frac{1}{4}$ -inch pipe union. Finally, to the unoccupied end of this union is fastened a short pipe nipple over which the rubber tube leading to the im-

pinger flask is attached. This tube may be of any suitable length, chiefly dependent upon the requisites of the sampling problem at hand.

Between the two halves of the pipe union there is placed a Monel metal disk approximately 1.5 millimeters in thickness, pierced at its center by a circular orifice seven sixty-fourths of an inch in diameter. By employing such an orifice plate, it is possible to obtain a gauge reading approximately double that obtainable without the use of this device.<sup>10</sup>

Any type of suitably calibrated vacuum measuring device may be used for the measurement of the air flow. The reader will note that we have employed an ordinary vacuum gauge, which in many tests has been found to be sufficiently sensitive and at the same time durable enough to withstand the rough usage to which such field equipment is subjected. The ejector type of instrument weighs approximately 3½ pounds.

#### HAND-DRIVEN SUCTION APPARATUS

Early in the course of the studies at the United States Bureau of Mines Experiment Station at Pittsburgh, the necessity became apparent for a hand-actuated apparatus, to be used in work places lacking electric power or compressed air. Such a device was designed and constructed and is fully described in Public Health Bulletin No. 144. The apparatus in its present form (fig. 3, Pl. II) consists of a tripod of metal tubing supporting a vertical post and a horizontal bar at its apex. The horizontal bar is provided with an ordinary bicycle seat. To the vertical post at a suitable level (adjustable) there is attached a positive pressure blower (used as a source of suction) of the same size and capacity as that used with the electrically driven type of apparatus. In this case, however, all of the excess metal of the blower has been removed by machining in order to reduce the weight of the apparatus. The blower is geared to a pair of crank handles by a pair of gears having an 8 to 1 ratio. The suction inlet of the blower is attached to the impinger sampling bottle which is supported near the top of the vertical post of the tripod. The steel tubing of which the tripod and its appendages are constructed may be dismantled and the complete apparatus fitted into a canvas case somewhat resembling a gun case. The weight of the complete apparatus is approximately 17 pounds.

A revolution counter attached to the large gear records the number of its revolutions. Calibration of the instrument with a gas meter showed that the volume of air sampled per revolution of the pump varied somewhat with the rate of revolution. The calibration curve

<sup>10</sup> We are indebted to Mr. Theodore Hatch, of the Harvard School of Public Health, for the design for this orifice plate attachment.

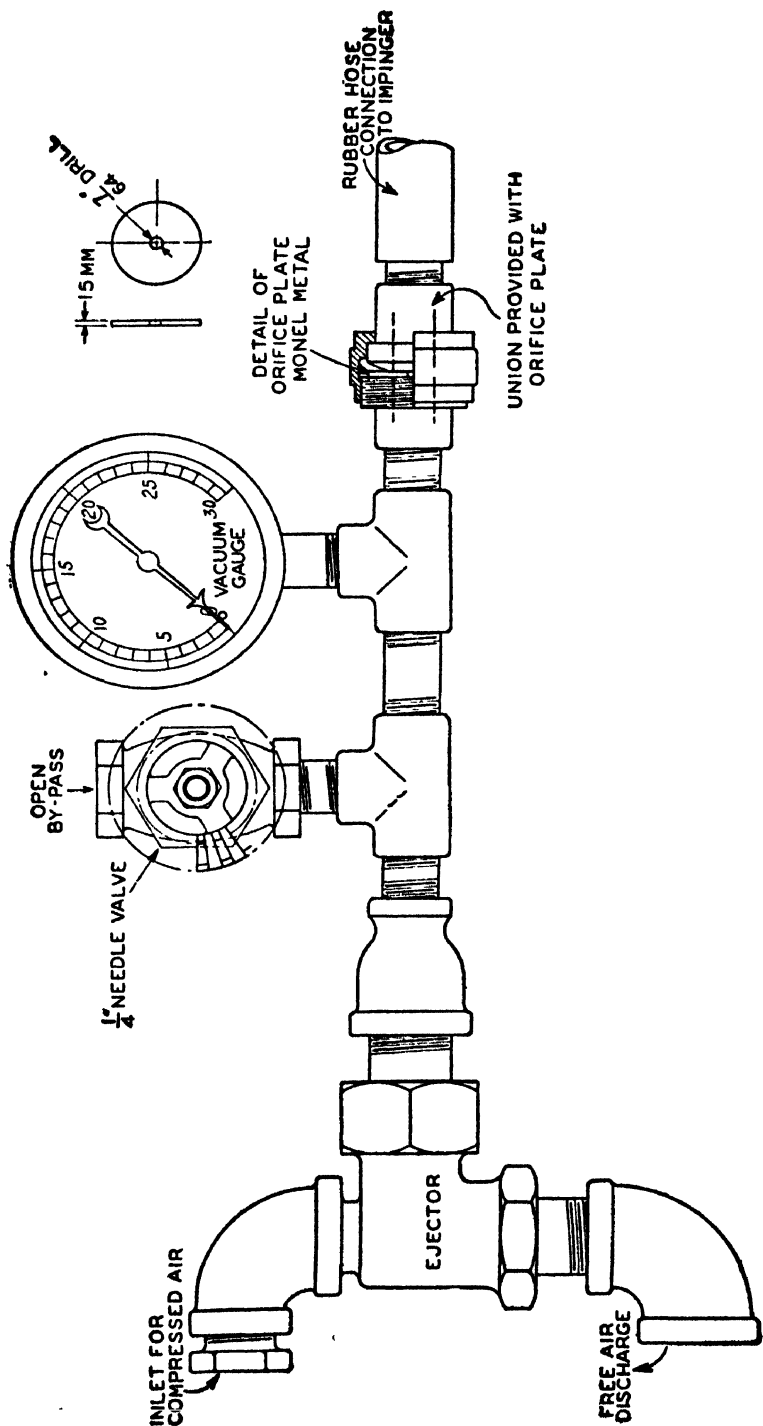


FIGURE 9.—Drawing of compressed-air driven suction apparatus

presented herewith (fig. 10) is taken from Public Health Bulletin No. 144. The particular pump tested aspirated 1 cubic foot of air per minute when operated at 92 revolutions per minute.

When the apparatus is in use the operator turns the crank at the rate of approximately one and one-half revolutions per second, maintained as constantly as possible, for an appropriate length of time. The number of revolutions per minute is determined by dividing the total number of revolutions by the time of sampling. From a curve similar to that of Figure 10, the volume per revolution is calculated, which is multiplied by the number of revolutions to give the total volume of air sampled.

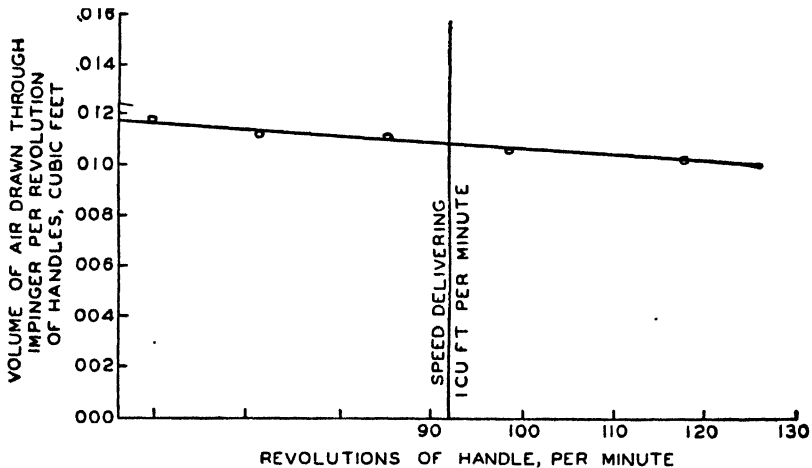


FIGURE 10.—Calibration curve of rotary pump for hand-driven suction apparatus

Of the three types of instruments described we have had least experience with the hand-driven apparatus, since in most industrial places compressed air or electric current were found to be available. For general field use, the compressed-air apparatus, with frequently calibrated vacuum gauge, has been found to be the most satisfactory form of apparatus.

#### IMPINGER TUBE AND SAMPLING FLASK

The impinger tube in the model of the apparatus described in Public Health Bulletin No. 144 (p. 67) consisted of a piece of Pyrex glass tubing, drawn down to a tip with a 2.3-millimeter orifice. To this tube a metal tripod and circular impinging plate were attached by means of a bronze split-sleeve clamp. The distance between the orifice and the upper surface of the plate was kept at 5 millimeters.

In practice, this impinger tube yielded satisfactory results. Nevertheless, it was felt that it would be preferable to eliminate the use of metal, particularly where acid or alkali was to be used as the collecting



fluid. Accordingly, there was designed and constructed the all-glass impinger tube shown in Figure 11, with circular glass impinger plate about 2.5 millimeters in diameter, fixed by three supporting rods about 9 centimeters long to the impinger tube at a distance of 5

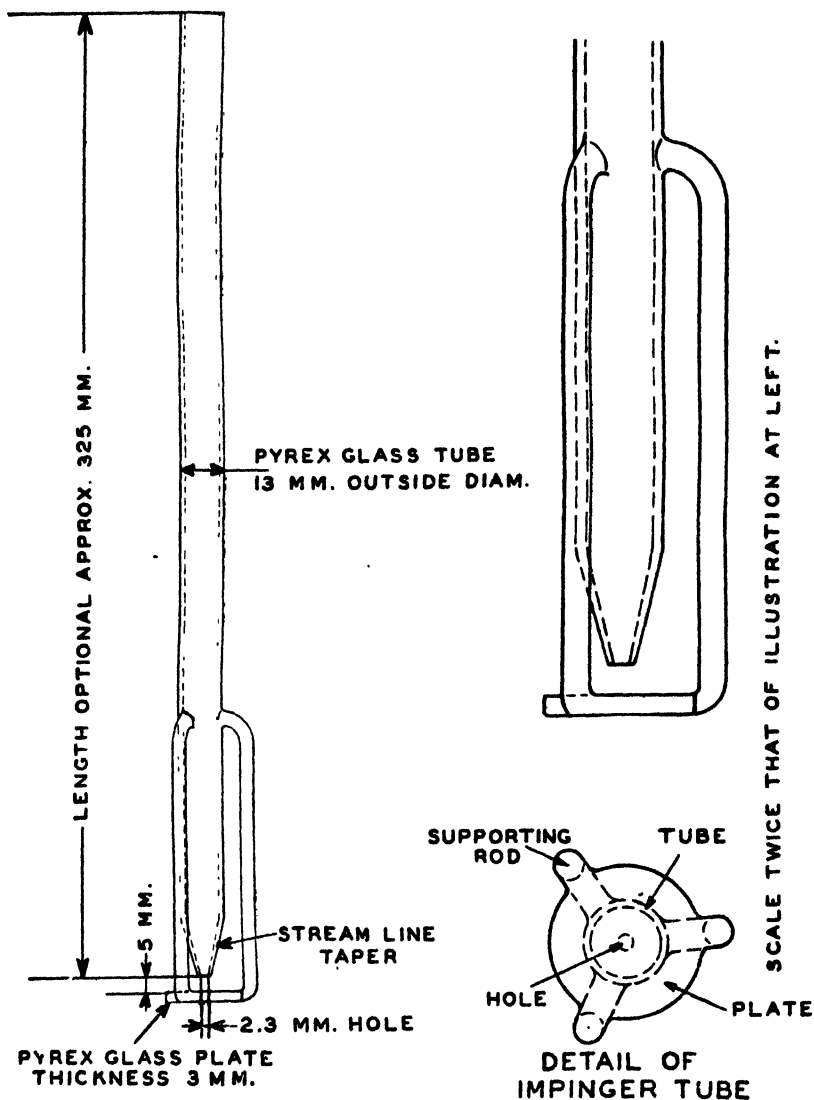


FIGURE 11 —Drawing of impinger tube

millimeters from the orifice. The tube was 13 millimeters in outside diameter. Pyrex glass was used throughout.<sup>11</sup> Tubes of this type have been employed without an undue amount of breakage.

<sup>11</sup> To Mr. Sperling, glass blower of the United States Bureau of Standards, we are indebted for the making of these tubes.

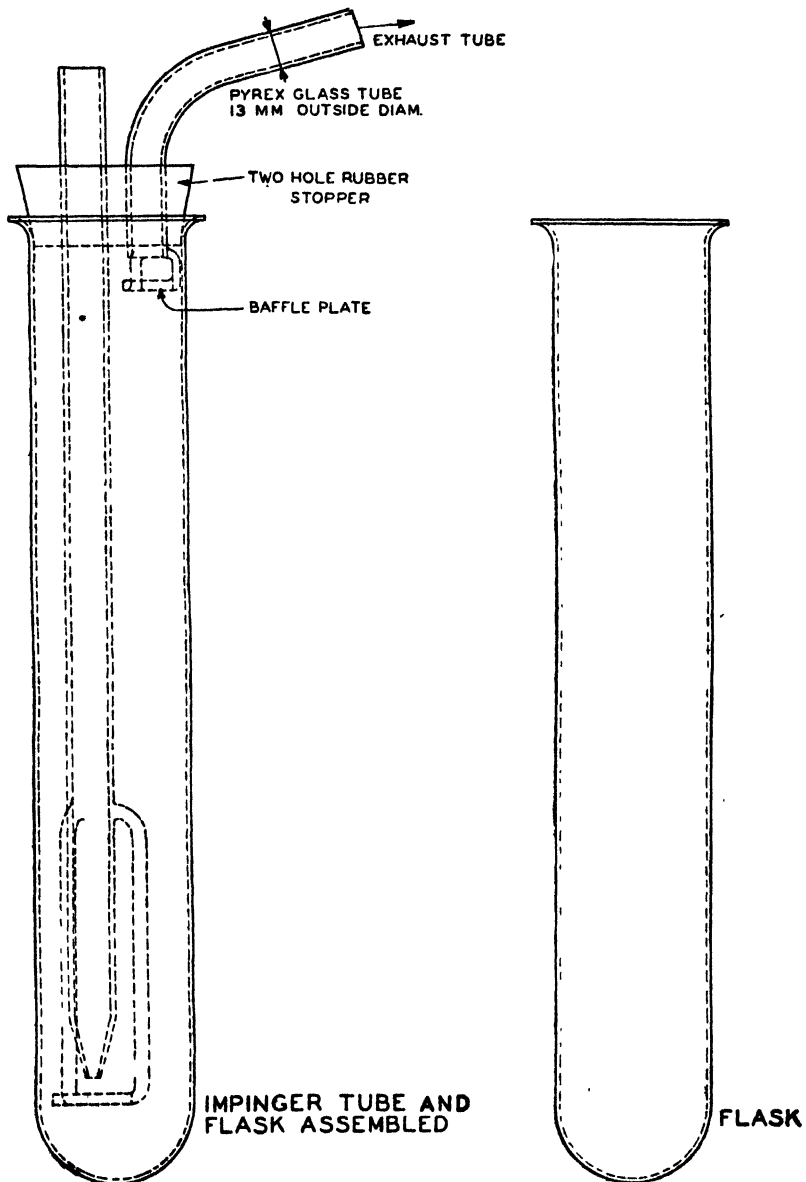


FIGURE 12.—Drawing of glass sampling cylinder and complete impinger

A few modifications have been made in the impinger flask. Originally, a round 16-ounce glass bottle fitted with a 2-hole rubber stopper was used. A short time later we substituted a 500-cubic centimeter Pyrex glass assay flask (wide-mouth conical Erlenmeyer type) which proved to be very satisfactory.

In certain studies it was found desirable to obtain dust samples in the region of the mouth and nose of a worker in order to secure a more representative picture of the air actually breathed. This was done in a very ingenious manner by the Australian workers, Badham, Rayner, and Broose,<sup>12</sup> who utilized as the sampling flask a cylinder 12 inches in length, and 2 inches in inside diameter. The cylinder was fastened to the worker by a specially designed strap passing around the chest. We have employed a similar flask made in the form of a tube sealed at the lower end, 300 millimeters in length and 50 millimeters in diameter, provided with the 2-hole rubber stopper (shown in fig. 12). For protection from the impact of large pieces of flying material, as well as for convenient support, the tube was placed inside of a cylindrical leather holster which in turn was made fast to the chest of the worker by means of a pair of straps fastened about the chest and shoulders. Thus, the inlet end of the impinger tube was fixed at a point very close to the nose and mouth of the wearer. As before, the outlet tube from the sampling cylinder is connected to the source of suction by means of a convenient length of noncollapsible rubber tubing. Figure 4 (Pl. II) shows this form of impinger sampling cylinder with its leather holster, as used in our studies.

Whether bottle flask or cylinder is used, sufficient liquid should be kept in the container during use to cover the impinger plate to a depth of approximately 3 centimeters. In the cylinder type of flask 100 cubic centimeters are sufficient to accomplish this, whereas if the Erlenmeyer type of flask is used, 250 cubic centimeters are required. A baffle plate on the exhaust tube, as shown in Figure 12, is sometimes advantageous.

#### METHOD OF SAMPLING

##### CALIBRATION OF THE IMPINGER APPARATUS

It is necessary to calibrate the air-measuring device of the impinger apparatus so that one may control the rate and quantity of air sampled. The technique employed for this purpose with the hand-actuated suction apparatus has already been described. With the electrically-driven suction device or with the compressed-air-driven apparatus a suitable flowmeter or vacuum gauge is commonly used as the measuring device. For calibration, the apparatus should be

<sup>12</sup> Badham, Charles, Rayner, H. E. G., and Broose, H. D.: Dust sampling in Sydney sandstone industries. Report of the Director-General of Public Health, New South Wales, for the year 1927. Serial No. 12.

assembled in a manner precisely similar to that employed in field sampling, but with the outlet tube of an accurate 5-light, dry, test gas meter attached to the inlet of the impinger apparatus.<sup>13</sup> A calibration curve is then obtained, showing the relationship between rates of air flow, as measured by the gas meter during observed intervals of time, and the readings on the scale of the flow meter or vacuum gauge. The scale reading corresponding to 1 cubic foot per minute may then be ascertained. The air-measuring device should be calibrated at frequent intervals and always after any readjustment of the apparatus. In the field, the predetermined reading should be maintained throughout the course of each sampling period by adjustment of the needle valve.

Prior to the taking of dust samples in the field it is important that the suction apparatus be carefully inspected and completely cleaned so as to insure proper functioning while in use. Care should be exercised to insure against leaky connections in the air circuit.

#### CHOICE AND PREPARATION OF SAMPLING FLUID

In spite of the generally contrary belief, many dusts, including even silica, are soluble in water.<sup>14</sup> This is to a great extent due to the

<sup>13</sup> A convenient method of connecting the gas meter with the electrically driven apparatus was suggested by Assistant Physicist F. L. Knowles of the Office of Industrial Hygiene and Sanitation. This consists in placing the controlling needle valve, mentioned on page 657, in a by-pass which connects the intake or suction side of the blower with the pressure side (instead of merely on the suction side with the other side of the needle valve open). With such a connection, and with tight apparatus, the amount of air discharged at the open pressure orifice represents the exact amount drawn in through the impinger, and the gas meter may be attached to the open pressure orifice so as to work under positive pressure. Under these conditions, the gas meter may be used during actual sampling, and the total volume of the sample may be directly read on the gas meter; it is nevertheless convenient to have a flowmeter or vacuum gauge in the circuit, so that the constancy of the rate may be continually observed.

To determine whether there is a difference in the reading of a meter when it is connected to the intake rather than to the outgo side of the electrically driven impinger apparatus, two meters (one recently calibrated, and the other a used meter) of the same type and capacity were connected in series with the impinger and the blower, one meter at the intake side of the impinger, and the other at the outgo side of the blower, the incoming air passing successively through the first meter, the impinger, the blower, and finally through the second meter. To determine the difference in pressure and temperature of the air entering the two meters, mercury manometers and thermometers were inserted in the circuit before each of the two meters. A flowmeter was also inserted between the first meter and the impinger.

A number of 5-minute tests were made with this arrangement when the blower was cool, the air passing through the impinger at the rate of about 1 cubic foot per minute, the flow meter indicating a nearly constant flow in spite of the usual slight mechanical irregularities in the motion on the meter dials. Allowing for the small difference (about 1.3 per cent) in the rates of the two meters, determined by runs of the two meters in series first on pressure, then on suction, also by interchanging the meters, it was found that the average difference between simultaneous meter readings on the intake and outgo sides of the impinger was less than 1 per cent, the readings on the pressure side being slightly greater than those on the suction. This also indicates that the blower and connections were tight. At the rate of flow used, about 1 cubic foot per minute, the indicated difference in pressure at the two manometers was several millimeters of mercury. The air entering the first meter on suction was found to be, on the average, 0.3° C. lower than that entering the second meter on pressure. After these tests had been made, the blower was allowed to run for three hours to heat it thoroughly and then the tests were repeated. No significant difference was found in the results. It may be noted that the impinger cools the air passing through it, and the blower heats it, so that these two actions tend to neutralize each other.

With the compressed-air apparatus, however, the gas meter is used only for calibration, and is attached by its outlet side to the intake of the impinger tube.—Editorial note.

<sup>14</sup> Myers, W. M.: Solubility of finely divided rock dusts in water, kerosene, and alcohol. Bureau of Mines, Reports of Investigations, Serial No. 2548, November, 1923.

large surface area exposed to the solvent by small particles of suspended material. A proper sampling fluid should be used in order to avoid solution. We have as a rule used distilled water and by conducting the analyses within 24 hours have been able to avoid significant dust loss. Preferably, the counting should be done on the day of sampling. In the case of those dusts not easily wetted by water, such as coal dust, we have employed a mixture of 25 per cent alcohol and 75 per cent water with excellent results. The alcohol increases the wetting power of the solution and at the same time greatly reduces the solubility of mineral dusts in water. Possible action on the rubber stopper of whatever collecting fluid may be chosen should be appropriately controlled.

It is important that the sampling fluid itself be comparatively free from suspended matter. Distilled water should be prepared, if possible, by one of the continuous types of water stills and, after distillation, should be permitted to stand for about 24 hours, the upper part being drawn off for use. If alcohol is employed, it should be redistilled before use.

#### PREPARATION OF SAMPLING FLASKS

Prior to taking samples in the field the desired number of sampling flasks are thoroughly cleaned with hot cleaning solution, rinsed several times in tap water, and finally rinsed with the fluid used as the sampling medium. The stoppers are thoroughly freed from adventitious dust by several washings in tap water and finally in the sampling fluid. The required amount of sampling fluid is placed in each impinger flask, a cleaned solid-rubber stopper is put in place, and a cap of paper is fastened over the top by means of a rubber band. The flasks are now ready for transport to the place where samples are to be taken. We have made use of a carrying case especially built for this purpose. It is portable and accommodates 18 flasks.

#### FIELD TECHNIQUE IN SAMPLING

In taking dust samples the location of the sampling place, the time during which sampling is conducted, and the duration of sampling are all chosen in an effort to obtain the data required by the study in progress. Obviously the requirements of the study under way govern the procedure to be employed.

The 2-hole rubber stopper fitted to the impinger tube and exhaust elbow may be transported in a spare flask containing some of the sampling fluid. Such a procedure serves both to protect the impinger tube and to keep it clean and ready for use. The exposed ends of the impinger tube and exhaust elbow should always be protected against accidental contamination.

After the selection of the sampling position, the stopper of one of the impinger flasks is replaced by the 2-hole rubber stopper containing the impinger tube and exhaust elbow. The solid stopper is put on the spare bottle, thus protecting the rinse fluid and at the same time preventing contamination of the stopper. This completely equipped impinger is now placed in the leather holster, while the holster in turn is securely strapped about the worker or held by an assistant at the desired sampling point. The holster serves a twofold purpose: First, it serves to protect the glass tube from breakage by flying objects in the work place, and, second, it fixes the entrance to the impinger tube very close to the nose and mouth of the worker. The outlet or suction elbow of the sampling flask is connected with the source of suction by means of a suitable length (commonly 25 feet) of noncollapsible rubber tubing.

In certain cases it is not feasible to place the impinger flask about the neck of the worker, nor is it convenient to have an assistant hold the flask near the worker. Under these conditions we have connected a length of rubber tubing (about 15 feet) to the inlet of the impinger apparatus (the impinger tube) and fastened the free end at the desired sampling point. With a sampling rate of 1 cubic foot per minute, dust particles pass through a  $\frac{3}{8}$ -inch tube 15 feet long in less than a second, hardly sufficient time to allow settling to take place.

The duration of the sampling period should be such as to yield a satisfactory suspension of dust for analysis, and is thus dependent on the concentration of dust in the atmosphere. Under the usual industrial conditions, samples of from 10 to 30 cubic feet of air are sufficient to yield enough suspended dust for analysis. Since a sampling rate of 1 cubic foot per minute is maintained, this will require a sampling period of from 10 to 30 minutes. A stop watch is used to measure this period.

After the sample has been taken, the impinger tube is withdrawn. The tube is rinsed both inside and out with some sampling fluid from a fresh bottle, the rinsings being added to the original sample and the sampling flask stoppered and capped for transport to the laboratory. Should the impinger tube be found to be contaminated with adherent dust after rinsing, it should be carefully cleaned or, better still, replaced by an unused tube. Spare tubes should always be carried.

Notes are promptly made of all the pertinent data with reference to each sample.

#### METHOD OF COUNTING

##### COUNTING IN CELLS

Earlier in this report it was pointed out that practically all dusts are, to some extent, soluble in water, and, hence, counts should be conducted within 24 hours after sampling. Such a practice tends to

prevent any undue flocculation as well as solvent action on some of the minute dust particles.

As soon, therefore, as the samples can be transferred to a satisfactory place for counting, the stopper of the flask is removed and carefully washed, the washings being added to the contents of the flask. Next the entire sample is filtered into a previously cleaned graduated flask through a screen of appropriate fineness (325-mesh) so that only particles smaller than 40 microns in diameter are permitted to pass through. If the dust suspension in the graduated

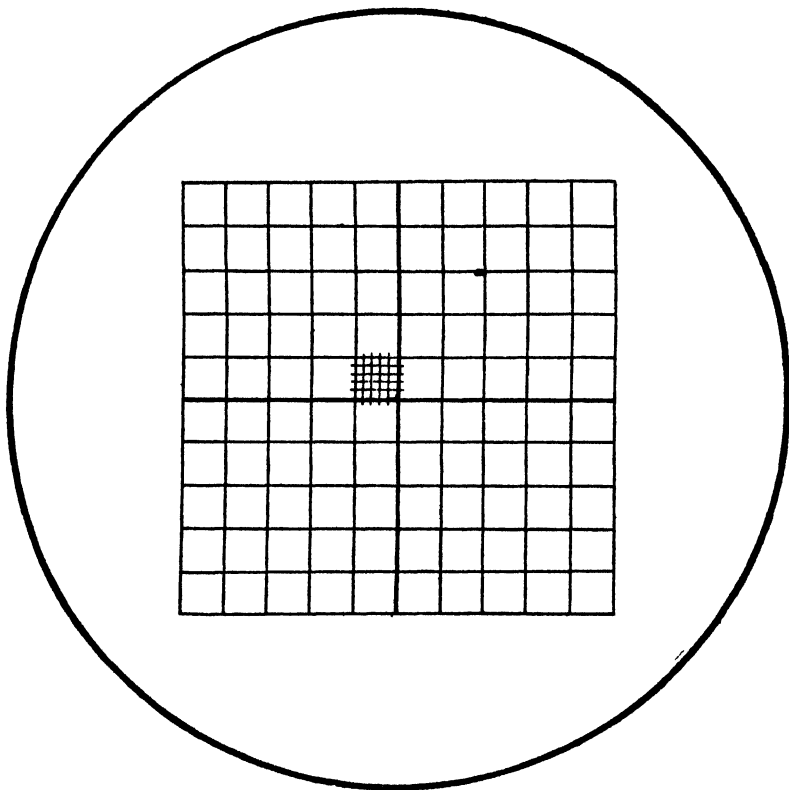


FIGURE 13.—Ruling of Whipple ocular micrometer disk

flask is too dense, further dilution is advisable. This dilution may conveniently be such that the number of particles counted in each microscope field is about 50 to 75. The contents of the graduated flask are next thoroughly agitated in order to obtain a uniform suspension, and two portions of about 1 cubic centimeter each are removed with a pipette so as to just fill, without bubbles, two Sedgwick-Rafter counting cells (see fig. 5, Pl. II). The cells have been previously cleaned very carefully in order to remove any adventitious dust, and have been kept protected from dust particles by the cover slip.

In making dust counts an eyepiece micrometer known as a Whipple disk is employed (see fig. 13). This disk has a large square engraved on it, covering a large part of the field, and this square is divided into 100 medium-sized squares, one of these in turn being further subdivided into 25 very small squares. Using an ordinary microscope provided with a suitable eyepiece and objective and fitted with an Abbé condenser, the proper tube length of the microscope is determined by calibration with a stage micrometer, so that the side of the large square of the eyepiece covers 1,000 microns (1 millimeter). (We employ a 7.5 X eyepiece, 16 millimeters objective, and a tube length of 178 millimeters.) The large square of the eyepiece ruling, therefore, incloses the dust in an area of 1 square millimeter; and since the cell is 1 millimeter deep, all the dust suspended in 1 cubic millimeter of the water is under the ruled field. This examination is accomplished by raising and lowering the lens system so as to focus throughout the entire depth of the cell. As a source of illumination we employ an ordinary small electric microscope lamp.

The dust is allowed to settle for 20 minutes before counting is done. In general, only particles less than 10 microns in diameter are counted. The inclusion of particles larger than 10 microns in the filtered specimen would make but little change in the total count. The average diameter of a particle for the purpose of this exclusion is judged by inspection. In practice it is necessary to count the dust in only one-quarter of each ruled field, the entire field having been examined for uniformity. Such counts on five fields, so dispersed as to be representative, are made on each of the two Sedgwick-Rafter cells. These 10 counts are averaged, but this average is not to be taken as the final count until a corresponding control count has been subtracted. In all cases a sampling flask which is handled in the plant, but through which no air has been aspirated, is used as the control for the particular series of samples taken in that plant on that particular day, and counts are made on this control fluid in the same manner as on the fluid through which the air sample has been impinged. The control sample takes into consideration any dust which may be present in the eyepiece micrometer, in the lenses of the microscope, in the Sedgwick-Rafter counting cell, and in the sampling fluid itself. From the average gross count obtained on the impinger sample, the average control count is to be subtracted to give the average net count per  $\frac{1}{4}$ -microscopic field.

#### COMPUTATION OF RESULTS

The average net count per  $\frac{1}{4}$ -microscopic field is multiplied by 4 to yield the average count in the total field. Since the Sedgwick-Rafter cell is 1 millimeter deep, this figure represents the number of



particles in a cubic millimeter of the diluted sample. This value is multiplied by 1,000 to give the count per cubic centimeter of sample and again by the total number of cubic centimeters of fluid to which the original specimen was diluted. This product is divided by the number of cubic feet of air sampled. In summary, the number of particles per cubic foot of air = average net count per  $\frac{1}{4}$  field times a factor, where the factor =

$$\frac{4 \times 1,000 \times \text{total volume of diluted sample in c. c.}}{\text{Volume of air sampled in cubic feet}}$$

#### RECORDING OF RESULTS

The record should show the sample number, date, sampling location, and volume of air in cubic feet. The steps in counting should be recorded as to date, volume of fluid, volume taken for dilution, calculated total volume at final dilution, average gross count per  $\frac{1}{4}$ -microscopic field, average control count, average net count, factor according to above formula, and finally number of particles expressed in millions per cubic foot, together with any additional notes.

(NOTE.—Only a small portion of the sample is used in this counting technique. The remainder may be used for other desired analysis.)

#### EXTENT OF THE USE OF THE IMPINGER APPARATUS

Since its introduction in 1922 the impinger apparatus has been employed for the sampling of dust in a large number of studies. Hatch, Drinker, and Choate,<sup>15</sup> working at the laboratories of the Harvard School of Public Health, used the instrument in their granite studies and Badham and his coworkers<sup>16</sup> availed themselves of it in their studies of the Sydney sandstone industries. Fehnel,<sup>17</sup> of the Metropolitan Life Insurance Co., employed the impinger apparatus on rock-drilling hazards in New York City, and the workers of the United States Bureau of Mines have utilized it in their studies of mine dusts.<sup>18</sup>

Our own experience with the instrument has covered a very wide range of uses. We have used it in the sampling of dust in outdoor air during a rainstorm, in grinding and woodworking shops, in the

<sup>15</sup> Hatch, Theodore, Drinker, Philip, and Choate, Sarah P.: Control of the silicosis hazard in the hard rock industries. 1. A laboratory study for the design of dust-control systems for use with pneumatic granite-cutting tools. *Journal of Industrial Hygiene*, 12, 3, p. 75, March, 1930.

<sup>16</sup> See footnote 12.

<sup>17</sup> Fehnel, J. William: III. A study of silica dust in hard rock drilling in New York City. *Journal of Industrial Hygiene*, 11, 2, p. 69, February, 1929.

<sup>18</sup> Forbes, J. J., and Emery, A. H.: Sources of dust in coal mines. *Bureau of Mines Report of Investigations*, No. 2793.

silverware-making industry,<sup>19</sup> in sand-blasting processes,<sup>19 21</sup> in the cement industry,<sup>20</sup> in the granite cutting industry,<sup>21</sup> and in bituminous and anthracite coal mines. Reference to Table 1 discloses the dust content of various atmospheres in which the instrument has been used. The table also presents the range (maximum and minimum) of the dust counts and the number of samples taken in the various locations.

TABLE 1.—*Results of analyses of dust samples obtained with the impinger apparatus*

Sampling location	Number of samples	Dust count <sup>1</sup> in millions of particles per cubic foot of air		
		Minimum	Maximum	Average
Outdoor air during rainstorm.....	4	0.3	0.4	0.3
Woodworking shops.....	4	1.1	2.3	1.5
Grinding and polishing shops.....	24	1.2	25.9	4.8
Silverware manufacturing				
Nonexposed group.....	20	.1	1.2	.8
Exposed group.....	156	.7	116.2	6.3
Cement manufacturing.....	81	.6	105.0	26.0
Granite cutting:				
Hand pneumatic tool operators.....	56	2.4	201.0	59.2
Machine pneumatic tool operators.....	44	.6	165.7	35.9
Attendant labor.....	95	.9	64.0	17.0
Anthracite coal mining				
Miners and miners' helpers.....	32	3.6	954.7	231.5
Attendant labor.....	19	.1	252.8	31.1
Bituminous coal mining				
Coal cutters and coal loaders.....	14	5.3	253.6	112.3
Attendant labor.....	4	1.5	10.2	3.9

<sup>1</sup> Total particles.

During the course of certain studies it has become necessary from time to time to sample air for gases and mists. It occurred to us that the impinger apparatus might be of value for this purpose. In studying the concentration of chromic acid in the air of workrooms wherein chromium plating was being conducted, the impinger sampling apparatus was found to be highly efficient.<sup>22</sup> A normal solution of sodium hydroxide was used in this case as the collecting medium, the air being drawn through the apparatus at the rate of 35 liters per minute. The fluid was then titrated by the usual iodometric method with 0.01 N sodium thiosulphate. Samples of air taken with two such impinger flasks in series revealed no chromic acid in the

<sup>19</sup> Greenburg, Leonard. Studies of the industrial dust problem. III. Comparative field studies of the Palmer apparatus, the konimeter, and the impinger methods for sampling aerial dust. *Public Health Reports*, 46 (July 31, 1925), pp. 1591-1603.

<sup>20</sup> Thompson, L. R., Brundage, D. K., Russell, A. E., and Bloomfield, J. J.: The health of workers in dusty trades. I. Health of workers in a Portland cement plant. *Public Health Bulletin* No. 176, April, 1928, pp. 3, 24-29.

<sup>21</sup> Russell, A. E., Britten, R. H., Thompson, L. R., and Bloomfield, J. J.: The health of workers in dusty trades. II. Exposure to siliceous dust (granite industry). *Public Health Bulletin* No. 187, July, 1926, pp. 20-28.

<sup>22</sup> Bloomfield, J. J., and Blum, William: Health hazards in chromium plating. *Public Health Reports*, 43 (Sept. 7, 1928), pp. 2330-2347.

second flask. Finally, the impinger device was tested in comparison with a gas-absorption device in which the air at the rate of 1 liter a minute was passed through a sintered glass plate gas absorption bottle. In spite of the rapid rate of sampling with the impinger, it was possible to obtain results concordant with those obtained by this gas-absorption device; and as the impinger apparatus samples large volumes of air in short periods of time, it is considered a most satisfactory device for field studies of this type.

The impinger apparatus has been used for the sampling of lead dust and lead fumes in air, both in this country and in Australia. Because of the fine state of subdivision, lead fumes are obviously more difficult to sample than is lead dust. In fact, the sampling of this material constitutes a most severe test of a sampling device. The impinger apparatus was employed for this purpose by the investigators of the United States Public Health Service in the study of lead tetraethyl.<sup>23</sup>

In the atmosphere of industrial establishments not employing lead and yet containing very small amounts of this substance, the instrument was again used with success. Leake<sup>24</sup> records results ranging from 0.37 to 0.02 milligrams of lead per 10 cubic meters of air in the following establishments:

TABLE 2.—Lead dust in the air of nonlead using industrial establishments

Establishment	Milligrams of lead per 10 cubic meters of air	Establishment	Milligrams of lead per 10 cubic meters of air
Cracker and cake factory.....	0.37	Dairy.....	0.11
Underwear factory.....	.35	Machine shop (iron and steel).....	.10
Shirt and overall factory.....	.26	Wooden-heel factory.....	.10
Machine shop (brass).....	.24	Tailoring and pressing shop.....	.09
Retail grocery.....	.23	Mail-bag factory.....	.08
Cigar factory.....	.18	Ice-cream plant (very damp).....	.02

Finally, the instrument has been employed by us in investigating one of the dustiest of the lead industries (the making of storage batteries). In one such study,<sup>25</sup> amounts of lead varying from 3.4 to 160 milligrams per 10 cubic meters of air were found in the work-rooms.

#### SUMMARY

The object of the present contribution has been to describe the design and construction of an apparatus for the sampling of atmos-

<sup>23</sup> Leake, J. P., et al.: The use of tetraethyl lead gasoline in its relation to public health. Section V. Atmospheric and dust studies, by J. P. Leake and J. J. Bloomfield. Public Health Bulletin No. 163.

<sup>24</sup> Leake, J. P.: Lead hazards. Journal of the American Medical Association, 89, 14, p. 1105, October, 1927.

<sup>25</sup> Greenburg, L., Schaye, A. A., and Shlionsky, H.: A Study of Lead Poisoning in a Storage Battery Plant. Public Health Reports vol. 44, 28, July 12, 1929, pp. 1666-1698.

pheric particulate matter. This device, known as the impinger apparatus, possesses the advantage of high dust-catching efficiency when sampling air over the full range of dustiness (from relatively pure outdoor air to that found in very dusty coal-mining operations) at the relatively rapid rate of 28.3 liters (1 cubic foot) per minute. The dust is caught in a liquid medium in which it may then be counted and analyzed microscopically, gravimetrically, and chemically. Three forms of the instrument are described: The electrically-driven, the compressed-air driven, and a hand-actuated form. Photographs and drawings of the apparatus have been provided.

The results of the sampling of various dusts, as well as of chromic acid mists and lead fumes, are cited in order to show the range over which this instrument may be used.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Death certificate as evidence.*—(District of Columbia Court of Appeals; *Labofish v. Berman et al.*, 60 Washington Law Reporter 100; decided Jan. 18, 1932.) An act of Congress approved June 23, 1874, as amended by an act approved June 11, 1878, made it the duty of the health officer of the District of Columbia "to enforce regulations to secure a full and correct record of vital statistics, including the registration of deaths and the interment of the dead." By the act of April 24, 1880, the ordinances of the Board of Health of the District were validated, and the act of August 7, 1894, provided that they should "have the same force and effect within the District of Columbia as if enacted by Congress in the first instance." One of these ordinances made it the duty of the board of health, in case of the death of a person, to require the attending physician "to furnish and deliver, to the undertaker or other person superintending the burial of said deceased person, a certificate, duly filed, setting forth, as far as the same may be ascertained, the name, age, color, sex, nativity, occupation, whether married or single, duration of residence in the District of Columbia, cause, date, and place of death," and made it the duty of the undertaker to forward the certificate to the registrar within 24 hours.

In a case in which the probate of a will was contested, the court of appeals stated that "We think the effect of these acts of Congress is to make death certificates, in the circumstances, public records and not mere police regulations, and, being such public records, we think they may be offered in evidence for the purpose of proving, *prima facie*, the time, place, and cause of death."

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended March 5, 1932, and March 7, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 5, 1932, and March 7, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar 5, 1932	Week ended Mar 7, 1931	Week ended Mar 5, 1932	Week ended Mar 7, 1931	Week ended Mar 5, 1932	Week ended Mar 7, 1931	Week ended Mar 5, 1932	Week ended Mar 7, 1931
<b>New England States:</b>								
Maine.....	2	2	8	116	385	31	1	1
New Hampshire.....	1			12	17	18	0	0
Vermont.....		1		3	69	1	0	0
Massachusetts.....	33	44	18	30	584	524	1	3
Rhode Island.....	13	10	2	3	714		0	1
Connecticut.....	7	6	20	13	283	508	0	2
<b>Middle Atlantic States:</b>								
New York.....	122	123	1 514	1 49	2, 307	1, 427	10	20
New Jersey.....	56	69	212	50	170	728	1	5
Pennsylvania.....	168	100			2, 489	2, 884	7	24
<b>East North Central States:</b>								
Ohio.....	59	48	233	167	570	615	3	1
Indiana.....	42	39	200	95	59	767	10	9
Illinois.....	88	187	202	90	263	1, 496	4	19
Michigan.....	31	25	154	209	767	141	1	23
Wisconsin.....	23	9	704	196	405	337	1	1
<b>West North Central States:</b>								
Minnesota.....	10	12	2	1	15	58	0	4
Iowa.....	15	13		1	3	16	0	3
Missouri.....	22	33	15	56	117	397	2	6
North Dakota.....	6	2			59	17	1	0
South Dakota.....	4	8	66		27	27	0	0
Nebraska.....	4	14	86	10	21	15	1	0
Kansas.....	7	7	19	70	169	21	0	1
<b>South Atlantic States:</b>								
Delaware.....	3	2	1	33		46	0	0
Maryland.....	29	19	166	228	40	891	5	2
District of Columbia.....	14	30	7	4	2	154	2	2
West Virginia.....	18	11	295	229	470	40	0	1
North Carolina.....	22	24	44	185	457	574	2	5
South Carolina.....	8	17	1, 049	2, 652	128	99	1	3
Georgia.....	5	9	118	956	12	167	2	1
Florida.....	13	9	9	222	3	127	0	0
<b>East South Central States:</b>								
Kentucky.....	32		653		82	284	4	0
Tennessee.....	19	10	1, 185	312	104	157	1	6
Alabama.....	15	26	99	442	5	641	2	8
Mississippi.....	20	9					0	3

\* New York City only.

\* Week ended Friday.

\* Typhus fever, week ended Mar. 5, 1932, 1 case in Alabama.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended March 5, 1932, and March 7, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931
<b>West South Central States:</b>								
Arkansas.....	10	4	81	319	1	35	0	0
Louisiana.....	23	30	169	49	110	26	0	2
Oklahoma <sup>1</sup> .....	24	7	1,343	138	75	25	0	2
Texas.....	61	31	225	59	18	92	0	1
<b>Mountain States:</b>								
Montana.....		4	2,652		42	5	0	1
Idaho.....	1		1			2	0	1
Wyoming.....						1	0	0
Colorado.....	5	9			80	346	1	0
New Mexico.....	8	5	2,012	18	105	47	2	3
Arizona.....	2	6	9	11		180	1	1
Utah <sup>1</sup> .....	1			19	4	5	0	0
<b>Pacific States</b>								
Washington.....	4	9	8	1	682	44	2	0
Oregon.....	4	3	245	161	192	58	0	1
California.....	58	70	227	602	403	1,205	10	6
Division and State	Polioomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931
<b>New England States:</b>								
Maine.....	0	0	8	33	0	0	0	3
New Hampshire.....	0	0	28	2	0	0	0	0
Vermont.....	0	0	9	5	8	0	0	0
Massachusetts.....	2	0	457	318	0	0	2	2
Rhode Island.....	0	0	57	55	0	0	0	0
Connecticut.....	0	0	143	62	2	0	0	1
<b>Middle Atlantic States:</b>								
New York.....	1	1	1,811	870	0	11	11	10
New Jersey.....	0	0	322	291	0	0	2	2
Pennsylvania.....	1	0	645	643	7	0	10	24
<b>East North Central States:</b>								
Ohio.....	0	2	341	508	96	51	6	3
Indiana.....	0	0	144	400	6	149	1	2
Illinois.....	0	2	387	677	8	36	6	2
Michigan.....	0	0	552	366	12	19	7	10
Wisconsin.....	0	3	119	178	14	8	2	7
<b>West North Central States:</b>								
Minnesota.....	0	0	154	141	4	4	3	3
Iowa.....	2	0	48	127	15	75	0	1
Missouri.....	0	0	57	261	20	40	1	4
North Dakota.....	0	0	14	8	0	8	0	3
South Dakota.....	0	0	15	19	5	19	4	0
Nebraska.....	0	1	31	50	9	60	0	0
Kansas.....	1	1	47	59	4	75	2	3
<b>South Atlantic States:</b>								
Delaware.....	0	0	18	30	0	0	0	0
Maryland.....	0	0	121	104	0	0	7	2
District of Columbia.....	1	0	51	26	0	0	2	0
West Virginia.....	0	2	58	17	3	14	4	0
North Carolina.....	1	0	47	50	2	2	4	1
South Carolina.....	0	2	10	7	0	0	7	1
Georgia.....	0	0	14	89	0	0	15	3
Florida.....	0	0	6	11	1	2	3	2
<b>East South Central States:</b>								
Kentucky.....	0	0	117	76	2	8	16	4
Tennessee.....	0	0	37	68	28	1	10	1
Alabama <sup>1</sup> .....	0	1	27	36	15	8	5	3
Mississippi.....	1	0	7	25	32	27	3	3

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Mar. 5, 1932, 1 case in Alabama.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 5, 1932, and March 7, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931	Week ended Mar. 5, 1932	Week ended Mar. 7, 1931
<b>West South Central States:</b>								
Arkansas.....	0	0	8	24	22	41	1	3
Louisiana.....	0	0	20	20	2	23	15	3
Oklahoma <sup>1</sup> .....	0	0	35	40	3	84	6	1
Texas.....	0	5	49	42	29	55	4	9
<b>Mountain States:</b>								
Montana.....	0	0	60	44	0	4	0	5
Idaho.....	0	0	3	5	2	5	0	1
Wyoming.....	0	0	4	21	0	2	0	0
Colorado.....	0	1	23	41	6	11	0	0
New Mexico.....	0	0	11	14	2	7	1	0
Arizona.....	0	0	9	1	0	0	0	0
Utah <sup>2</sup> .....	0	0	8	17	0	2	1	0
<b>Pacific States</b>								
Washington.....	0	1	48	40	18	25	1	1
Oregon.....	0	0	30	37	24	33	1	1
California.....	5	12	143	150	11	71	2	6

<sup>1</sup> Week ended Friday.

<sup>2</sup> Figures for 1932 are exclusive Oklahoma City and Tulsa.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Men-ingo-coccus menin-gitis	Diph-theria	Influ-enza	Ma-laria	Mea-sles	Pel-legra	Polio-my-e-litis	Scarlet fever	Small-pox	Ty-phoid fever
<i>January, 1932</i>										
California.....	18	332	767	2	1, 145	1	8	615	59	14
Kansas.....	3	178	44	-----	274	-----	1	285	8	6
Mississippi.....	5	120	2, 394	1, 097	17	279	2	106	114	47
Nevada.....	10	2	31	-----	6	-----	0	9	0	1
New Hampshire.....	-----	19	1	-----	-----	-----	3	115	-----	4
Oklahoma <sup>1</sup> .....	4	238	729	42	151	3	3	193	139	43
South Carolina.....	-----	183	2, 142	514	180	133	1	62	6	58
South Dakota.....	2	32	163	-----	223	-----	1	45	74	10
Texas.....	3	614	263	273	-----	-----	3	365	-----	50
Virginia.....	10	426	2, 430	9	444	14	6	453	4	50
Washington.....	2	26	67	-----	1, 527	-----	0	223	65	10

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

<i>January, 1932</i>		Cases	Paratyphoid fever—Continued.	Cases
<b>Actinomycosis:</b>			South Carolina.....	4
California.....		2	Texas.....	5
South Dakota.....		1	Washington.....	1
<b>Chicken pox:</b>			<b>Psittacosis:</b>	
California.....		2,504	California.....	3
Kansas.....		649	Puerperal septicemia	
Mississippi.....		521	Mississippi.....	20
Nevada.....		24	Rabies in animals	
Oklahoma <sup>1</sup> .....		111	California.....	35
South Carolina.....		201	Mississippi.....	3
South Dakota.....		101	South Carolina.....	10
Virginia.....		692	<b>Scabies:</b>	
Washington.....		479	Oklahoma <sup>1</sup> .....	34
<b>Dengue:</b>			South Carolina.....	8
Mississippi.....		6	<b>Septic sore throat</b>	
South Carolina.....		4	California.....	11
<b>Diarrhea:</b>			Kansas.....	4
South Carolina.....		335	Oklahoma <sup>1</sup> .....	23
<b>Diarrhea and dysentery:</b>			South Carolina.....	2
Virginia.....		99	<b>Tetanus</b>	
<b>Dysentery</b>			California.....	3
California (amebic).....		7	Oklahoma <sup>1</sup> .....	2
California (bacillary).....		15	<b>Trachoma</b>	
Mississippi (amebic).....		17	California.....	9
Oklahoma <sup>1</sup> .....		5	Mississippi.....	2
South Dakota.....		1	Oklahoma <sup>1</sup> .....	4
<b>Food poisoning</b>			South Dakota.....	1
California.....		38	Washington.....	2
<b>German measles.</b>			<b>Trichinosis</b>	
California.....		40	California.....	10
Kansas.....		6	<b>Tularaemia</b>	
Washington.....		38	Kansas.....	2
<b>Hookworm disease:</b>			Mississippi.....	1
South Carolina.....		77	Oklahoma <sup>1</sup> .....	1
<b>Impetigo contagiosa</b>			South Carolina.....	1
Kansas.....		4	Virginia.....	7
<b>Jaundice</b>			<b>Typhus fever</b>	
California.....		1	South Carolina.....	1
<b>Leprosy</b>			Virginia.....	1
California.....		2	<b>Undulant fever:</b>	
<b>Lethargic encephalitis.</b>			California.....	6
California.....		2	Kansas.....	1
South Carolina.....		2	South Carolina.....	1
<b>Mumps</b>			Virginia.....	2
California.....		581	Washington.....	1
Kansas.....		276	<b>Vincent's angina.</b>	
Mississippi.....		150	Kansas.....	25
Oklahoma <sup>1</sup> .....		65	<b>Whooping cough:</b>	
South Carolina.....		240	California.....	540
South Dakota.....		33	Kansas.....	301
Washington.....		195	Mississippi.....	624
<b>Ophthalmia neonatorum.</b>			Nevada.....	13
Mississippi.....		5	Oklahoma <sup>1</sup> .....	50
South Carolina.....		15	South Carolina.....	130
<b>Paratyphoid fever:</b>			South Dakota.....	60
California.....		1	Virginia.....	1,215
Kansas.....		1	Washington.....	124

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.



# Cases of Certain Communicable Diseases Reported for the Month of January, 1932, by State Health Officers

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Maine.....	261	25	2,805	60	172	0	59	9	130
New Hampshire.....		19			115			4	
Vermont.....	298		1,467	419	44	63	115	1	280
Massachusetts.....	1,269	259	1,603	1,314	2,027	38	415	19	910
Rhode Island.....	127	37	4,205	361	180	0	7	0	110
Connecticut.....	594	32	496	345	338	34	137	5	453
New York.....	2,707	618	3,925	1,066	3,504	18	1,527	83	2,327
New Jersey.....	1,256	147	381	341	893	0	374	15	1,214
Pennsylvania.....	4,068	590	5,593	2,521	2,587	0	578	94	3,188
Ohio.....	1,708	454	1,333	1,114	1,076	150	551	40	2,299
Indiana.....	739	361	555	341	575	84	238	20	335
Illinois.....	1,864	590	279	278	1,668	86	858	43	1,456
Michigan.....	1,297	164	745	1,163	1,157	44	586	24	1,295
Wisconsin.....	1,845	98	544	1,112	422	13	138	5	1,068
Minnesota.....	444	84	180		443	22	139	7	111
Iowa.....	267	92	14	40	227	269	26	4	108
Missouri.....	465	315	96	56	463	121	220	9	749
North Dakota.....	176	5	185	27	82	107	14	6	14
South Dakota.....	101	32	223	33	45	74	3	10	60
Nebraska.....	177	58	81	110	141	32	23	3	52
Kansas.....	649	178	274	276	285	8	20	7	301
Delaware.....	93	25	5	35	77	0	8	0	37
Maryland.....	478	178	99	315	440	0	147	24	789
District of Columbia.....	60	79	6		95	1	70	6	71
Virginia.....	682	426	444		453	4	127	50	1,215
West Virginia.....	281	214	1,543	38	238	11	42	60	326
North Carolina.....	575	217	545		294	7		36	1,373
South Carolina.....	201	183	180	240	62	6	106	62	130
Georgia.....	106	77	17	54	109	0	110	44	77
Florida.....	16	67	36	26	19	2	55	24	27
Kentucky <sup>1</sup> .....									
Tennessee.....	151	198	71	78	311	66	201	82	259
Alabama.....	183	193	39	127	183	194	351	79	118
Mississippi.....	521	120	17	150	106	114	99	47	624
Arkansas.....	76	65	12	33	49	64	15	22	46
Louisiana.....	13	147	47	8	75	19	115	51	99
Oklahoma <sup>2</sup> .....	111	238	151	65	193	139	86	43	50
Texas.....		614			365			55	
Montana.....	154	11	481	9	161	10	54	8	41
Idaho.....	60	13	11	42	66	35	18	2	14
Wyoming.....	34	2	7	35	51	0	11	2	8
Colorado.....	284	47	58	148	215	14	50	5	62
New Mexico.....	101	75	40	44	56	5	78	7	37
Arizona.....	234	22	15	6	41	3	105	3	25
Utah <sup>3</sup> .....									
Nevada.....	24	2	6		9	0	7	1	13
Washington.....	479	26	1,527	195	223	65	93	11	124
Oregon.....	275	10	107	130	133	87	47	9	51
California.....	2,504	332	1,145	581	615	59	919	15	540

<sup>1</sup> Pulmonary.<sup>2</sup> Reports received weekly.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

## Case Rates per 100,000 Population (Annual Basis) for the Month of January, 1932

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid and para- typhoid fever	Whoop- ing cough
Maine.....	384	37	4, 129	88	253	0	87	13	191
New Hampshire.....		48			290			10	
Vermont.....	977		4, 811	1, 473	144	207	149	3	918
Massachusetts.....	348	71	440	361	556	10	114	5	250
Rhode Island.....	215	63	7, 113	611	304	0	12	0	186
Connecticut.....	420	23	358	249	244	25	99	4	327
New York.....	248	57	360	98	321	2	140	8	213
New Jersey.....	357	42	108	97	254	0	106	4	345
Pennsylvania.....	493	71	678	305	313	0	70	11	386
Ohio.....	298	79	233	195	345	26	96	7	402
Indiana.....	266	130	200	123	207	30	86	7	121
Illinois.....	283	90	42	42	253	13	130	7	221
Michigan.....	307	39	176	275	274	10	139	6	306
Wisconsin.....	731	39	216	441	167	5	55	2	419
Minnesota.....	203	38	82		202	10	63	3	51
Iowa.....	127	44	7	19	106	128	12	2	51
Missouri.....	150	102	31	18	149	39	71	3	242
North Dakota.....	364	9	319	47	142	185	24	10	24
South Dakota.....	170	54	376	56	76	125	5	17	101
Nebraska.....	151	49	69	94	120	27	20	3	44
Kansas.....	405	111	171	172	178	5	12	4	188
Delaware.....	456	122	24	171	377	0	39		181
Maryland.....	341	126	49	225	314	0	105	17	563
District of Columbia.....	143	189	14		227	2	167	14	170
Virginia.....	336	207	215		220	2	62	24	589
West Virginia.....	188	143	1, 034	25	159	7	28	40	218
North Carolina.....	209	79	198		107	3		13	499
South Carolina.....	136	124	122	162	42	4	71	42	88
Georgia.....	43	31	7	22	44	0	45	18	31
Florida.....	12	52	28	20	15	2	42	18	21
Kentucky <sup>1</sup> .....									
Tennessee.....	67	88	32	35	138	29	89	36	115
Alabama.....	60	85	17	56	80	85	154	35	52
Mississippi.....	302	70	10	87	61	66	57	27	362
Arkansas.....	48	43	8	21	31	40	13	14	29
Louisiana.....	7	81	26	4	41	10	163	28	55
Oklahoma <sup>2</sup> .....	63	135	85	37	109	79	49	24	28
Texas.....		121			72			11	
Montana.....	338	24	1, 056	20	354	22	119	18	90
Idaho.....	158	34	29	111	174	92	121	5	37
Wyoming.....	175	10	36	180	282	0	15	10	41
Colorado.....	320	53	65	167	242	16	56	6	70
New Mexico.....	277	205	110	121	153	14	214	19	101
Arizona.....	617	58	40	16	108	8	277	8	66
Utah <sup>3</sup> .....									
Nevada.....	305	25	76		114	0	89	13	165
Washington.....	356	19	1, 134	145	166	48	69	8	92
Oregon.....	333	12	129	157	161	105	57	11	62
California.....	496	66	227	115	122	12	182	8	107

<sup>1</sup> Pulmonary.<sup>2</sup> Reports received weekly.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

# ADMISSIONS TO HOSPITALS FOR THE INSANE, APRIL, 1930

Reports for the month of April, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 113 hospitals, located in 37 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 179,759 patients on April 30, 1930, 95,918 males and 83,841 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of April, 1930, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	9	0	9
2. Senile psychoses.....	170	131	301
3. Psychoses with cerebral arteriosclerosis.....	202	125	327
4. General paralysis.....	213	50	263
5. Psychoses with cerebral syphilis.....	27	8	35
6. Psychoses with Huntington's chorea.....	2	3	5
7. Psychoses with brain tumor.....	1	1	2
8. Psychoses with other brain or nervous disease.....	27	15	42
9. Alcoholic psychoses.....	105	16	121
10. Psychoses due to drugs and other exogenous toxins.....	10	8	18
11. Psychoses with pellagra.....	15	25	40
12. Psychoses with other somatic diseases.....	35	61	96
13. Manic-depressive psychoses.....	212	263	475
14. Involution melancholia.....	21	46	67
15. Dementia praecox (schizophrenia).....	394	317	711
16. Paranoia and paranoid conditions.....	26	29	55
17. Epileptic psychoses.....	55	31	86
18. Psychoneuroses and neuroses.....	33	27	60
19. Psychoses with psychopathic personality.....	23	9	32
20. Psychoses with mental deficiency.....	66	40	106
21. Undiagnosed psychoses.....	138	108	246
22. Without psychosis.....	209	56	265
Total.....	1,993	1,369	3,362

During the month of April, 1930, there were 3,362 new admissions to the hospitals, 59.3 per cent of these new admissions being males and 40.7 per cent females, the ratio being 146 males per 100 females. Five hundred and eleven of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,851 new admissions for whom provisional diagnoses were made. Of these 2,851 patients, cases of dementia praecox constituted 24.9 per cent; manic-depressive psychoses, 16.7 per cent; psychoses with cerebral arteriosclerosis, 11.5 per cent; senile psychoses, 10.6 per cent; and general paralysis, 9.2 per cent. These five classes accounted for 2,077 cases, or 72.9 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on April 30, 1930:

	Male	Female	Total
Patients on books Apr. 30, 1930:			
In hospitals .....	86,630	70,682	163,312
On parole or otherwise absent, but still on books .....	9,288	7,159	16,447
Total .....	95,918	83,841	179,759

Of the 179,759 patients, 9,288 males and 7,159 females were on parole or otherwise absent but still on the books at the end of the month—9.7 per cent of the males, 8.5 per cent of the females, and 9.1 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended February 27, 1932, and February 28, 1931*

	1932	1931 <sup>1</sup>	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States .....	1,201	1,073	-----
98 cities .....	416	447	785
Measles:			
45 States .....	11,841	13,850	-----
98 cities .....	3,718	4,515	-----
Meningococcus meningitis:			
46 States .....	94	167	-----
98 cities .....	38	96	-----
Pollomyelitis:			
46 States .....	29	22	-----
Scarlet fever:			
46 States .....	6,588	6,222	-----
98 cities .....	2,873	2,396	1,613
Smallpox:			
46 States .....	347	965	-----
98 cities .....	28	129	59
Typhoid fever:			
46 States .....	180	146	-----
98 cities .....	32	45	29
<i>Deaths reported</i>			
Influenza and pneumonia:			
91 cities .....	1,188	1,609	-----
Smallpox:			
91 cities .....	0	0	-----

<sup>1</sup> The figures published in the Public Health Reports (Mar. 11, 1932, p. 623) for cities as for the week ended Feb. 21, 1931, are for the week ended Feb. 28, 1931.

## City reports for week ended February 27, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	2	0	0	2	0	206	0	4
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	1
Manchester.....	0	0	0	-----	3	0	0	2
Nashua.....	0	1	1	-----	0	1	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	0	2
Burlington.....	0	0	0	-----	0	4	0	0
Massachusetts:								
Boston.....	51	26	17	6	3	16	19	35
Fall River.....	1	3	1	-----	0	7	1	0
Springfield.....	17	4	0	-----	1	8	16	1
Worcester.....	2	2	7	-----	0	0	19	6
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	10	8	1	-----	0	393	4	11
Connecticut:								
Bridgeport.....	3	5	0	-----	0	0	0	1
Hartford.....	12	4	1	-----	0	0	23	7
New Haven.....	18	1	0	-----	2	0	11	12
MIDDLE ATLANTIC								
New York:								
Buffalo.....	64	11	3	-----	2	9	7	23
New York.....	262	188	126	322	45	100	135	277
Rochester.....	18	5	1	-----	0	458	16	4
Syracuse.....	26	2	0	-----	0	250	14	1
New Jersey:								
Camden.....	11	5	5	-----	0	3	5	1
Newark.....	69	13	6	47	3	3	54	14
Trenton.....	9	3	0	10	1	0	4	2
Pennsylvania:								
Philadelphia.....	104	65	13	16	12	9	62	45
Pittsburgh.....	49	18	9	23	25	216	45	50
Reading.....	37	1	0	-----	0	6	1	2
Scranton.....	4	-----	0	-----	0	4	1	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	13	7	1	-----	2	0	0	7
Cleveland.....	96	30	10	92	4	481	113	19
Columbus.....	2	2	3	335	5	1	0	5
Toledo.....	30	4	1	15	13	26	1	6
Indiana:								
Fort Wayne.....	3	2	8	-----	0	0	0	1
Indianapolis.....	39	6	0	-----	4	5	80	20
South Bend.....	2	1	1	-----	1	0	0	0
Terre Haute.....	3	1	1	-----	1	0	0	1
Illinois:								
Chicago.....	103	91	29	79	27	113	11	81
Peoria.....	5	0	0	-----	3	1	0	7
Springfield.....	1	1	1	4	1	1	6	2

## City reports for week ended February 27, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Michigan:								
Detroit.....	77	43	17	43	6	45	29	26
Flint.....	11	2	2	59	0	61	90	3
Grand Rapids.....	3	0	1	4	1	85	8	2
Wisconsin:								
Kenosha.....	5	0	0	-----	0	0	1	1
Madison.....	12	0	2	-----	-----	3	0	-----
Milwaukee.....	105	14	2	10	9	177	40	9
Racine.....	25	2	0	1	1	21	100	2
Superior.....	0	0	0	-----	0	0	27	0
WEST NORTH CENTRAL								
Minnesota								
Duluth.....	1	0	0	-----	0	0	0	7
Minneapolis.....	19	13	5	-----	8	3	27	17
St. Paul.....	14	6	0	1	1	1	7	8
Iowa:								
Davenport.....	3	0	0	-----	-----	0	0	-----
Des Moines.....	0	1	3	-----	-----	1	0	-----
Sioux City.....	0	0	0	-----	-----	0	2	-----
Waterloo.....	8	0	0	-----	-----	0	1	-----
Missouri								
Kansas City.....	26	5	2	-----	0	2	3	22
St. Joseph.....	12	0	1	-----	0	0	0	7
St. Louis.....	47	37	19	-----	-----	2	6	9
North Dakota:								
Fargo.....	2	0	0	-----	0	37	0	0
Grand Forks.....	0	0	0	-----	-----	0	0	-----
South Dakota:								
Sioux Falls.....	0	0	0	-----	-----	0	0	-----
Nebraska:								
Omaha.....	3	6	5	-----	0	0	2	9
Kansas:								
Topeka.....	22	1	0	1	1	1	0	2
Wichita.....	18	1	3	-----	0	73	1	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	4	1	0	-----	0	1	1	2
Maryland:								
Baltimore.....	132	20	8	38	5	2	113	34
Cumberland.....	0	0	0	4	0	5	0	1
Frederick.....	1	0	1	-----	0	1	0	0
District of Columbia:								
Washington.....	37	14	11	3	3	2	0	16
Virginia:								
Lynchburg.....	2	0	0	-----	0	0	0	0
Norfolk.....	14	0	3	-----	0	0	1	3
Richmond.....	7	3	2	-----	3	0	0	2
Roanoke.....	6	1	2	-----	0	0	0	1
West Virginia:								
Charleston.....	27	0	0	3	0	90	0	2
Huntington.....	0	-----	0	-----	0	0	0	0
Wheeling.....	2	0	0	-----	0	1	0	4
North Carolina:								
Raleigh.....	5	0	0	-----	0	29	0	4
Wilmington.....	2	0	0	-----	0	0	0	2
Winston-Salem.....	11	1	2	-----	0	1	2	4
South Carolina:								
Charleston.....	0	0	0	102	0	0	0	2
Columbia.....	0	1	0	-----	0	0	0	0
Greenville.....	0	0	0	-----	0	0	0	0
Georgia:								
Atlanta.....	4	3	5	21	1	0	2	10
Brunswick.....	0	0	0	-----	0	0	0	1
Savannah.....	2	0	0	20	2	12	0	1
Florida:								
Miami.....	0	2	3	-----	0	0	0	3
Tampa.....	2	2	4	-----	2	0	0	3

## City reports for week ended February 27, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	0		0	0	0	2
Lexington.....	4		0	1	0	3	12	0
Tennessee:								
Memphis.....	4	3	5		2	0	0	4
Nashville.....	1	1	0		3	0	0	7
Alabama:								
Birmingham.....	1	3	1	7	2	0	3	8
Mobile.....	0	0	2		0	0	0	1
Montgomery.....	5	1	0			0	13	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0			0	0	
Little Rock.....	3	1	1		0	0	5	2
Louisiana:								
New Orleans.....	0	14	15	4	4	0	0	4
Shreveport.....	3	0	0		0	52	5	4
Oklahoma:								
Muskogee.....	0		0	29	0	0	0	0
Oklahoma City.....	0	2	2	300	0	0	0	6
Texas:								
Dallas.....	8	6	7	32	1	18	0	16
Fort Worth.....	16	3	3		0	0	0	2
Galveston.....	0	1	3		1	0	0	1
Houston.....	1	5	10		1	1	0	5
San Antonio.....	1	3	0		0	0	1	0
MOUNTAIN								
Montana:								
Billings.....	1	0	0		0	2	0	0
Great Falls.....	4	0	0	1	3	0	0	2
Helena.....	0	0	0		0	5	0	0
Missoula.....	0	0	0	75	0	0	0	0
Idaho:								
Boise.....	0	0	0		0	0	0	1
Colorado:								
Denver.....	11	7	1		3	21	26	16
Pueblo.....	30	1	0		0	1	0	1
New Mexico:								
Albuquerque.....	3	1	0		0	34	14	1
Arizona:								
Phoenix.....	0		0		2	0	0	2
Utah:								
Salt Lake City.....	16	1	0		2	0	0	5
Nevada:								
Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	11	5	0			447	0	
Spokane.....	10	3	0			1	0	
Tacoma.....	6	2	0		0	11	5	2
Oregon:								
Portland.....	13	6	0	9	1	25	8	8
Salem.....	4	0	0	33	0	0	2	0
California:								
Los Angeles.....	205	30	33	113	5	1	22	15
Sacramento.....	30	2	0	2	1	136	0	20
San Francisco.....	84	13	2	7	0	85	3	8

## City reports for week ended February 27, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expe- ctancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland	4	4	0	0	0	0	0	0	0	6	25
New Hampshire:											
Concord	1	4	0	0	0	0	0	0	0	0	10
Manchester	2	14	0	0	0	0	0	0	0	0	17
Nashua	0	0	0	0	0	0	0	0	0	0	—
Vermont:											
Barre	0	0	0	—	—	0	0	0	0	0	7
Hurlington	1	2	—	0	—	0	0	0	0	0	15
Massachusetts:											
Boston	90	164	0	0	0	10	1	0	0	19	243
Fall River	4	2	0	0	0	2	0	0	0	1	30
Springfield	10	8	0	0	0	0	1	0	0	6	32
Worcester	11	33	0	2	0	2	0	0	0	7	—
Rhode Island:											
Pawtucket	2	0	0	0	0	0	0	0	0	0	17
Providence	15	24	0	0	0	2	0	0	0	12	—
Connecticut:											
Bridgeport	12	3	0	0	0	1	0	0	0	0	37
Hartford	7	9	0	0	0	2	0	1	0	11	43
New Haven	6	30	0	0	0	2	1	0	0	10	50
MIDDLE ATLANTIC											
New York:											
Buffalo	29	145	0	3	0	6	0	0	0	41	135
New York	302	924	0	0	0	91	7	6	0	175	1,694
Rochester	10	61	0	0	0	1	0	0	0	2	81
Syracuse	13	32	0	0	0	2	0	0	0	44	40
New Jersey:											
Camden	6	49	0	0	0	1	0	0	0	3	31
Newark	41	37	0	0	0	5	0	0	0	35	94
Trenton	6	9	0	0	0	3	0	0	0	6	37
Pennsylvania:											
Philadelphia	103	273	0	0	0	34	1	1	0	277	499
Pittsburgh	32	72	0	0	0	9	1	1	1	46	249
Reading	6	7	0	0	0	1	0	0	0	18	24
Scranton	—	28	—	0	0	0	—	0	0	3	—
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	27	36	0	1	0	7	0	0	0	4	124
Cleveland	60	40	1	0	0	14	0	0	0	188	207
Columbus	11	6	1	0	0	1	1	0	0	66	74
Toledo	13	5	0	0	0	7	0	0	0	59	92
Indiana:											
Fort Wayne	5	3	1	0	0	0	0	2	0	4	33
Indianapolis	16	4	8	0	0	2	0	0	0	32	—
South Bend	5	5	1	0	0	0	0	0	0	3	14
Terre Haute	2	1	0	0	0	0	0	0	0	2	27
Illinois:											
Chicago	152	218	1	0	0	39	2	1	0	150	602
Peoria	—	0	—	0	0	0	—	0	0	11	29
Springfield	3	7	0	0	0	1	0	0	0	11	17
Michigan:											
Detroit	124	233	2	0	0	11	0	0	0	141	283
Flint	17	5	0	0	0	2	0	4	0	12	34
Grand Rapids	14	4	1	0	0	1	1	0	0	7	53
Wisconsin:											
Kenosha	2	1	0	0	0	0	0	0	0	0	4
Madison	4	3	0	0	—	—	0	0	—	1	—
Milwaukee	35	60	0	0	0	5	0	0	0	107	115
Racine	5	1	0	0	0	2	0	0	0	0	21
Superior	2	0	0	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota:											
Duluth	10	1	0	0	0	1	1	0	0	0	20
Minneapolis	44	61	0	0	0	1	0	0	0	16	129
St. Paul	29	21	1	0	0	1	0	0	0	8	61



## City reports for week ended February 27, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport.....	2	7	1	0			0	0		0	
Des Moines.....	8	8	2	0			0	0		0	33
Sioux City.....	2	0	1	2			0	0		2	
Waterloo.....	1	2	0	1			0	0		3	
Missouri:											
Kansas City.....	25	15	0	0	0	4	0	1	0	31	112
St. Joseph.....	2	2	0	0	0	2	0	0	0	1	29
St. Louis.....	45	21	2	2	0	10	0	0	0	60	231
North Dakota:											
Fargo.....	2	1	0	0	0	0	0	0	0	0	10
Grand Forks.....	1	0	1	0			0	0		0	
South Dakota:											
Sioux Falls.....	1	0	0	1			0	0		0	5
Nebraska:											
Omaha.....	6	6	4	5	0	2	0	0	0	5	57
Kansas:											
Topeka.....	2	1	0	0	0	0	0	0	0	10	15
Wichita.....	2	0	2	0	0	0	0	0	0	0	26
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	1	0	0	0	3	0	0	0	3	67
Maryland:											
Baltimore.....	39	83	0	0	0	11	1	2	1	122	244
Cumberland.....	1	6	0	0	0	1	0	0	0	1	17
Frederick.....	0	2	0	0	0	0	0	0	0	8	4
District of Col.:											
Washington.....	27	22	0	0	0	6	0	1	0	19	173
Virginia:											
Lynchburg.....	0	3	0	0	0	0	0	1	0	8	10
Norfolk.....	2	3	0	0	0	2	0	0	0	3	
Richmond.....	4	10	0	0	0	2	0	0	0	0	50
Roanoke.....	1	2	0	0	0	1	0	0	0	0	11
West Virginia:											
Charleston.....	1	0	0	0	0	1	1	0	0	5	19
Huntington.....	—	2	—	0	0	0	—	0	0	0	—
Wheeling.....	2	2	0	0	0	1	0	1	0	11	31
North Carolina:											
Raleigh.....	1	3	0	0	0	1	0	0	0	2	28
Wilmington.....	0	0	0	0	0	0	0	0	0	10	14
Winston-Salem.....	1	5	0	0	0	4	0	0	0	20	27
South Carolina:											
Charleston.....	0	1	0	0	0	1	0	0	0	0	23
Columbia.....	0	0	0	0	0	0	0	0	0	0	
Greenville.....	—	2	0	0	0	0	—	0	0	0	
Georgia:											
Atlanta.....	6	4	1	0	0	5	0	1	0	2	85
Brunswick.....	0	0	0	0	0	0	0	0	0	0	1
Savannah.....	0	0	0	0	0	1	0	2	1	8	41
Florida:											
Miami.....	1	0	0	0	0	1	1	0	0	4	26
Tampa.....	1	1	0	0	0	1	1	0	0	0	24
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	0	0	0	0	0	0	0	0	0	17
Lexington.....	—	0	—	0	0	1	—	0	0	1	11
Tennessee:											
Memphis.....	12	11	2	3	0	3	0	0	0	13	74
Nashville.....	3	2	1	0	0	4	0	0	1	4	53
Alabama:											
Birmingham.....	4	4	1	0	0	6	0	2	0	1	69
Mobile.....	1	3	0	0	0	2	1	0	1	0	20
Montgomery.....	0	1	0	0	—	—	0	0	—	0	—

## City reports for week ended February 27, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	0	0	0			0	0		0	
Little Rock.....	1	0	1	0	0	1	0	0	0	0	3
Louisiana:											
New Orleans.....	10	8	0	1	0	18	2	1	0	1	141
Shreveport.....	2	2	1	0	0	3	1	0	0	4	36
Oklahoma:											
Muskogee.....		4		0	0	0		0	0	0	
Oklahoma City.....	3	6	2	0	0	3	0	0	0	0	35
Texas:											
Dallas.....	6	3	1	0	0	2	1	0	0	5	75
Forth Worth.....	4	3	3	2	0	2	0	1	0	0	31
Galveston.....	0	1	0	0	0	0	0	0	0	0	10
Houston.....	2	1	5	1	0	2	0	1	2	0	67
San Antonio.....	1	2	0	0	0	0	0	0	0	0	
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	10
Great Falls.....	3	0	0	0	0	0	0	0	0	1	10
Helena.....	0	0	0	0	0	0	0	0	0	0	5
Missoula.....	0	2	0	0	0	0	0	0	0	0	6
Idaho: Boise.....	0	1	1	0	0	0	0	0	0	0	
Colorado:											
Denver.....	16	14	1	0	0	4	1	0	0	9	83
Pueblo.....	0	1	0	0	0	0	1	0	0	4	9
New Mexico:											
Albuquerque.....	0	1	0	0	0	4	0	0	0	0	12
Arizona:											
Phoenix.....	1	0	1	0	0	6	0	0	0	0	
Utah:											
Salt Lake City.....	2	2	0	0	0	1	0	0	0	0	43
Nevada: Reno.....	0	0	0	0	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle.....	12	2	3	3			0	0		1	
Spokane.....	6	0	8	0			0	0		0	
Tacoma.....	5	3	3	0	0	2	0	0	0	0	30
Oregon:											
Portland.....	6	3	13	8	0	2	0	0	0	7	69
Salem.....	0	1		0	0	0		0	0	0	
California:											
Los Angeles.....	45	49	3	3	0	27	2	0	0	21	333
Sacramento.....	3	1	0	0	0	1	0	0	0	8	48
San Francisco.....	26	10	1	1	0	16	0	3	0	13	170

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Polomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston.....	2	0	0	0	0	0	0	0	0
Rhode Island:									
Providence.....	0	0	0	0	0	1	0	0	0
Connecticut:									
Bridgeport.....	1	0	0	0	0	0	0	0	0

## City reports for week ended February 27, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Polio-myelitis (Infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	4	2	2	0	0	0	1	2	0
Syracuse.....	1	0	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	1	1	0	0	0	0	0	0	0
Pittsburgh.....	3	0	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Columbus.....	1	1	0	0	0	0	0	0	0
Indiana:									
Fort Wayne.....	1	1	0	0	0	0	0	0	0
Indianapolis.....	5	1	0	0	0	0	0	0	0
Terre Haute.....	1	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	6	3	2	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	1	2	0	0	0	0	0	0
Racine.....	1	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Missouri:									
St. Louis.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	2	0	0	0	0	0	1	0	0
District of Columbia:									
Washington.....	1	0	0	0	1	0	0	0	0
Virginia:									
Roanoke.....	0	0	0	0	0	1	0	0	0
North Carolina:									
Wilmington.....	1	1	0	0	0	0	0	0	0
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston <sup>1</sup> .....	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta.....	1	1	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	3	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	1	0	1	0	1	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	0	0
Mobile.....	0	0	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Oklahoma:									
Oklahoma City.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	2	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	1	0	0	0	0	0	0	1	0

<sup>1</sup> Dengue, 3 cases at Charleston, S. C.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended February 27, 1932, compared with those for a like period ended February 28, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, January 24 to February 27, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931
98 cities.....	84	288	279	278	279	67	72	268	64	70
New England.....	93	103	48	84	265	75	108	70	65	89
Middle Atlantic.....	69	68	73	53	75	53	65	64	72	56
East North Central.....	68	110	79	96	74	85	57	66	45	76
West North Central.....	99	109	81	99	89	55	85	59	66	55
South Atlantic.....	120	273	84	275	59	59	88	47	69	77
East South Central.....	116	70	94	53	87	53	75	59	46	59
West South Central.....	201	183	152	156	168	118	158	186	119	132
Mountain.....	43	70	60	78	103	78	52	35	9	87
Pacific.....	63	45	72	60	278	49	47	59	67	57

## MEASLES CASE RATES

	334	2418	2448	2473	2433	521	533	2668	571	703
98 cities.....	1,922	438	2,322	502	2,019	534	1,589	511	1,510	635
New England.....	149	306	2,223	353	253	398	384	652	466	645
Middle Atlantic.....	210	142	321	151	364	183	577	274	560	300
East North Central.....	114	1,521	172	1,489	182	1,314	197	1,087	226	874
West North Central.....	71	1,054	196	1,296	245	1,820	359	2,206	282	2,805
South Atlantic.....	23	916	70	1,034	17	904	12	1,134	0	1,051
East South Central.....	115	17	184	3	320	17	251	24	234	24
West South Central.....	509	496	284	1,123	188	687	138	1,566	250	1,210
Mountain.....	938	110	1,138	112	2996	169	1,125	243	1,296	223
Pacific.....										

## SCARLET FEVER CASE RATES

	336	2337	2349	2320	2391	348	417	2346	441	373
98 cities.....	614	519	705	534	2634	683	738	589	673	606
New England.....	416	328	2447	304	546	322	631	342	664	381
Middle Atlantic.....	388	377	325	331	385	373	356	353	372	364
East North Central.....	212	396	284	480	235	474	241	407	248	509
West North Central.....	214	2313	245	2305	239	520	231	303	284	364
South Atlantic.....	127	517	143	423	127	362	75	534	121	558
East South Central.....	92	112	106	88	49	105	86	139	56	125
West South Central.....	207	322	250	261	172	400	267	286	172	303
Mountain.....	89	143	116	145	2120	123	128	94	124	145
Pacific.....										

## SMALLPOX CASE RATES

	5	217	22	223	24	18	4	20	4	20
98 cities.....	14	0	2	0	2	0	5	0	5	0
New England.....	0	0	0	2	0	0	0	3	1	0
Middle Atlantic.....	2	25	0	12	1	10	1	13	1	11
East North Central.....	11	84	9	151	11	84	13	128	19	125
West North Central.....	0	20	2	10	0	0	0	2	0	0
South Atlantic.....	6	18	10	29	6	12	29	18	17	23
East South Central.....	16	51	13	81	20	132	7	51	7	64
West South Central.....	9	0	0	44	17	0	0	44	0	9
Mountain.....	13	18	4	24	20	29	21	22	13	39
Pacific.....										

See footnotes at end of table.

Summary of weekly reports from cities, January 24 to February 27, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 30, 1932	Jan. 31, 1931	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931
98 cities.....	5	25	35	24	46	3	3	4	5	7
New England.....	2	5	2	2	2	2	0	0	2	5
Middle Atlantic.....	7	2	4	1	3	2	4	3	4	6
East North Central.....	1	1	4	2	2	1	3	0	4	3
West North Central.....	6	13	2	2	9	2	0	4	2	11
South Atlantic.....	16	8	4	18	16	0	10	10	16	22
East South Central.....	17	18	31	6	54	29	0	0	12	6
West South Central.....	3	14	23	24	3	14	3	7	7	14
Mountain.....	0	0	0	0	0	0	0	9	0	0
Pacific.....	2	10	1	0	13	10	2	12	6	4

## INFLUENZA DEATH RATES

91 cities.....	13	270	13	61	18	59	20	60	34	50
New England.....	5	34	10	46	17	46	7	43	14	24
Middle Atlantic.....	9	102	8	68	13	49	13	42	39	40
East North Central.....	11	36	12	52	15	56	18	61	37	61
West North Central.....	3	29	12	35	26	56	49	68	29	74
South Atlantic.....	14	127	16	129	18	119	18	123	31	79
East South Central.....	50	76	41	64	44	64	25	140	44	76
West South Central.....	37	100	30	73	44	159	50	97	24	45
Mountain.....	52	52	52	62	60	17	78	61	69	17
Pacific.....	9	14	12	12	7	14	14	26	14	41

## PNEUMONIA DEATH RATES

91 cities.....	109	259	119	231	134	218	154	218	157	212
New England.....	113	185	144	286	118	201	120	267	192	236
Middle Atlantic.....	111	369	103	293	124	254	162	236	184	217
East North Central.....	96	176	96	175	108	182	133	187	110	192
West North Central.....	113	159	160	136	244	124	285	147	244	218
South Atlantic.....	114	345	165	325	174	348	163	340	173	313
East South Central.....	125	229	157	178	182	166	144	267	138	274
West South Central.....	125	204	172	214	121	176	165	228	108	221
Mountain.....	138	200	215	209	172	183	198	200	224	191
Pacific.....	116	115	100	72	154	72	91	70	104	91

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Columbia, S. C., not included.

<sup>3</sup> Trenton, N. J., and Covington, Ky., not included.

<sup>4</sup> Barre, Vt., and San Francisco, Calif., not included.

<sup>5</sup> Barre, Vt., not included.

<sup>6</sup> Trenton, N. J., not included.

<sup>7</sup> Covington, Ky., not included.

<sup>8</sup> San Francisco, Calif., not included.

<sup>9</sup> The rates published in Public Health Reports dated Mar. 11, 1932, (pp. 631, 632) for the week ended Feb. 21, 1931, are incorrect as for that week. They are the rates for the week ended Feb. 28, 1931.

# FOREIGN AND INSULAR

## CANADA

*Provinces—Communicable diseases—Week ended February 20, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended February 20, 1932, as follows:

Province	Dysentery	Influenza	Lethargic encephalitis	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....						
Nova Scotia.....		19				
New Brunswick <sup>1</sup> .....						
Quebec.....				2		8
Ontario.....		96	1		16	5
Manitoba.....						1
Saskatchewan.....			1		23	7
Alberta.....						1
British Columbia.....	1				10	3
Total.....	1	115	2	2	49	25

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Ontario—Communicable diseases—Comparative—Five weeks ended January 30, 1932.*—The Department of Health of the Province of Ontario, Canada, reports certain communicable diseases for the five weeks ended January 30, 1932, and the corresponding period of 1931, as follows:

	Five weeks, 1932		Five weeks, 1931	
	Cases	Deaths	Cases	Deaths
Actinomycosis.....			1	
Cerebrospinal meningitis.....	9	5	6	3
Chicken pox.....	1,194		1,627	
Diphtheria.....	315	11	357	14
Dysentery.....			1	1
Erysipelas.....	25	2		
German measles.....	56		74	
Gonorrhea.....	286		174	
Influenza.....	11	10	32	9
Jaundice.....	10			
Lethargic encephalitis.....	2	1	1	1
Measles.....	4,926		189	
Mumps.....	703		790	1
Paratyphoid fever.....			1	
Pneumonia.....		156		202
Poliomyelitis.....	2		2	
Puerperal septicaemia.....	1			
Scarlet fever.....	526	4	1,029	7
Septic sore throat.....	11	4	3	1
Smallpox.....	14		47	
Syphilis.....	234	1	187	1
Trench mouth.....	2			
Tuberculosis.....	185	66	121	55
Typhoid fever.....	23	2	84	4
Undulant fever.....	6		15	
Whooping cough.....	844	2	266	6

**Quebec Province—Communicable diseases—Week ended February 20, 1932.**—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended February 20, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	91	Puerperal fever.....	2
Diphtheria.....	26	Scarlet fever.....	91
Erysipelas.....	12	Tuberculosis.....	73
German measles.....	8	Typhoid fever.....	8
Measles.....	370	Whooping cough.....	45
Poliomyelitis.....	2		

### CUBA

**Habana—Communicable diseases—Four weeks ended February 27, 1932.**—During the four weeks ended February 27, 1932, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	5		Scarlet fever.....	6	
Diphtheria.....	9	2	Tuberculosis.....	44	8
Malaria <sup>1</sup> .....	10	3	Typhoid fever.....	11	2
Measles.....	11				

<sup>1</sup> Many of these cases are from the island of Cuba, outside of Habana.

### GREAT BRITAIN

**Scotland—Vital statistics—Year 1931.**—The following vital statistics for the year 1931, with deaths from certain causes are taken from a report published by the Registrar General of Scotland:

Number of births.....	92,209	Deaths from—Continued.	
Birth rate per 1,000 population.....	19.0	Heart disease.....	9,534
Marriages.....	32,667	Influenza.....	1,270
Number of deaths.....	64,230	Measles.....	641
Death rate per 1,000 population.....	13.3	Nephritis.....	1,797
Deaths under 1 year.....	7,545	Pneumonia.....	4,955
Deaths under 1 year per 1,000 births.....	82	Puerperal sepsis.....	207
Deaths from—		Scarlet fever.....	161
Bronchitis.....	3,673	Tuberculosis, pulmonary.....	3,002
Cancer.....	7,159	Tuberculosis, other forms.....	1,201
Cerebrospinal fever.....	290	Typhoid fever.....	31
Diabetes mellitus.....	660	Whooping cough.....	957
Diphtheria.....	356		

**Scotland—Vital statistics—Quarter ended December 31, 1931.**—The Registrar General of Scotland has published the following statistics for the fourth quarter of the year 1931:

Population (provisional).....	4,842,554	Deaths from—Continued.	
Births.....	21,870	Heart disease.....	2,204
Birth rate per 1,000 population.....	17.9	Influenza.....	140
Deaths.....	14,880	Measles.....	404
Death rate per 1,000 population.....	12.2	Nephritis (acute).....	42
Marriages.....	8,000	Nephritis (chronic).....	300
Deaths under 1 year.....	1,672	Pneumonia.....	214
Deaths under 1 year per 1,000 births.....	76	Pneumonia (lobar).....	272
Deaths from—		Puerperal sepsis.....	53
Bronchitis.....	688	Scarlet fever.....	58
Broncho-pneumonia.....	481	Syphilis.....	35
Cerebrospinal fever.....	61	Tetanus.....	3
Diabetes.....	172	Tuberculosis.....	808
Diphtheria.....	87	Typhoid and paratyphoid fever.....	8
Dysentery.....	5	Whooping cough.....	90
Erysipelas.....	40		

## ITALY

*Communicable diseases—Four weeks ended September 20, 1931.*—During the four weeks ended September 20, 1931, certain communicable diseases were reported in Italy as follows:

Disease	Aug 24-30		Aug 31-Sept. 6		Sept. 7-13		Sept. 14-20	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	77	63	38	30	61	44	46	41
Cerebrospinal meningitis.....	3	3	5	5	7	6	6	5
Chicken pox.....	40	27	35	26	37	26	51	35
Diphtheria.....	391	212	350	219	523	248	425	236
Dysentery.....	72	30	46	25	47	26	23	18
Lethargic encephalitis.....	3	3			1	1	2	2
Measles.....	372	137	285	96	424	129	311	90
Polio-myelitis.....	20	15	7	7	23	14	25	16
Scarlet fever.....	255	101	236	117	353	131	300	133
Smallpox.....							1	1
Typhoid fever.....	1,149	566	1,185	554	1,685	687	1,267	577

## PANAMA CANAL ZONE

*Communicable diseases—January, 1932.*—During the month of January, 1932, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	23		Mumps.....	1	
Diphtheria.....	3		Pneumonia.....		81
Leprosy.....	2		Polio-myelitis.....	8	
Malaria.....	98	3	Tuberculosis.....		29
Measles.....	40	1	Whooping cough.....	11	1







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place	Aug., 1931	Sep- tember, 1931	November, 1931			December, 1931			January, 1932			February, 1932	
			1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20
Indo-China (French) (see also table above):													
Annam *												4	4
												4	4
Cambodia *	12	14	19	3	1		2	1	1	9	2	3	2
	2	7	18				1	1	1	2	2	3	2
Cochin-China *	39	18	14	5	1		3	3	2	1	2	7	2
	32	13	13	4			5	2	1	1	2	7	P
												5	

## PLAGUE

Place	Aug. 22- Sept. 19, 1931	Sept. 18- Oct. 14, 1931	Week ended—																				
			November, 1931			December, 1931			January, 1932						February, 1932								
			21	28	5	12	19	26	2	9	16	23	30	6	13	20	27						
Argentina: Cordoba Province 1																							
Azores:																							
San Miguel Island							2	3				1											
Tercera Island							9	1															
							4	2															
Belgian Congo																							
British East Africa (see also table below):														1									
Tanganyika																							
	4	13																					
Uganda		5														10							
	289	276		218				38	31	35	28	13	9	13	10								
	207	270		211			39	35	30	34	24	15	10	13	8								
Canary Islands: Palma Island—Los Llanos																3							
																6	3						

Mar.  
5,  
1932





Place	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	Nov- em- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Feb- ru- ary, 1932	Place	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	Nov- em- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Feb- ru- ary, 1932
Siam.....	C	4	4	4	5	1	3	1	1	1	1	1	1	1	1
Spain: Hospitalet—Barcelona Province.....	D	3	3	3	2	1	1	1	1	1	1	1	1	1	1
Syria: Beirut.....	C	2	2	2	7	1	1	1	1	1	1	1	1	1	1
Tunisia: Tunis.....	D	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Union of South Africa: Orange Free State.....	C	2	2	3	1	1	1	1	1	1	1	1	1	1	1
	C	1	1	1	1	P	P	P	P	P	P	P	P	P	P
British East Africa (see also table above): Kenya.....	C	235	14	64	44	41	17	Peru—Continued. Departments—Continued. Lambayeque.....	C	1	1	1	1	1	1
Province—								Libertad.....	C	1	1	1	1	1	1
Chimborazo.....	C	13	13	2	8	8	13	Lima.....	C	1	1	1	1	1	1
Loja.....	C	4	4	11	2	11	1	Plague-infected rats.....	C	1	1	1	1	1	1
Indo-China.....	C	4	3	3	9	16	1	Lima.....	C	1	1	1	1	1	1
Madagascar (see also table above):	D	4	1	1	5	9	1	Piura.....	C	1	1	1	1	1	1
Ambositra Province.....	C	2	1	8	39	49		Senegal:	C	1	1	1	1	1	1
Antisrabe Province.....	D	1	1	5	37	42		Baol.....	C	101	13	6	2	1	1
Maetanana Province.....	D	22	19	17	27	19		Dakar.....	C	58	45	4	4	4	4
Minarivao Province.....	D	22	19	17	27	19		Diourbel.....	C	194	31	4	4	4	4
Moramanga Province.....	D	20	14	18	10	5		Louga.....	C	106	13	10	5	5	5
Tananarive Province.....	D	3	12	13	23	15		Rufisque.....	C	2	10	1	19	0	0
Peru.....	D	45	63	120	166	134		Thies.....	C	2	4	2	7	12	2
Departments—	D	44	63	117	178	132		Yombel.....	C	2	1	2	16	7	7
Canele.....	D	2	2	8	27	21			C	26	12	8	1	1	1
Calamarca.....	D	14	2	7	11	9			C	16	8	5	7	1	1
	D				14	8			C						P

1 Reports incomplete.







**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

### SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

[illegible]



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Au- gust, 1931	Sep- tem- ber, 1931	Octo- ber 1931	November, 1931			December, 1931			January, 1932			February, 1932			
				1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20		
Indo-China (see also table above) . . . . .	72	39	47		20	2	98		144	41	324	11	107	191	145	208
Ivory Coast . . . . .	26	13	16		4		18		17	21	55	11	52	85	47	98
Syria: Beirut . . . . .	7				1											
	4				1											
												2	3			

Place	August, 1931	September, ber, 1931	October, ber, 1931	November, ber, 1931	December, ber, 1931	January, ber, 1932
Chosen.....C	19	9	7	2	1	1
Dutch East Indies.....D	7	1	1	-	-	-
France.....C	-	4	-	6	1	-
Mexico (see also table above)....D						
Morocco.....C						
Rumania.....C						
Siam.....C						
Turkey.....C						
U.S.A.....C						
Vietnam.....C						
Yokohama.....C						
Total.....						

## TYPHUS FEVER

Place	Aug. 23— Sept. 19, 1931	Sept. 20-Oct. 17, 1931	Oct. 18— Nov. 14, 1931	Week ended—													
				November, 1931				December, 1931				January, 1932				February, 1932	
				21	28	5	12	19	26	2	9	16	23	30	6	13	20
Algiers:																	
Algiers.....	C		2														
Constantine Department.....	C	2	1	38													
Geryville.....	C				1	1			3	1	2						
Oraon.....	C	1		1					3	6	2						
Oran.....	C			1								3	2	1			

Bulgaria.....	C	1		2		2		1	14	1	6	16	12	13	3	1	
Chile:	D							1	1	1			2	3	1		
Antofagasta.....	C			1										1			
Santiago.....	C			34	3												
China:	C																
Manchuria—Harbin.....	C	1															
Shanghai.....	C		1														
Chosen (see table below).																	
Colombia: Cali.....	D	1														1	
Czechoslovakia (see table below).																	
Egypt:	C																
Alexandria.....	C	2						3		1	1	1				1	63
Beheira.....	C	1		1					7								
Cairo.....	C	1		1				1	1								
Gharbiab.....	C			1													
Provinces.....	D									11	2	4		13	26	26	11
Greece (see table below).	D													2	1	1	3
Guatemala (see table below).																	
Irish Free State:	C																
Donegal County—Stranorlar.....								2									
Limerick County—																	
Croom.....	C	2	1														
Glin.....	C		1														
Limerick.....	C							1									
Rathkeale.....	C									1							
Waterford County—Lismore.....	C		1														
Lithuania (see table below).																	
Mexico:	D																
Guadaluajara.....										1							
Mexico City, including municipalities in Federal District.....	C	10	14	16	7	3	5	7	4	3	3	1	5	10	4	6	
Lithuania (see table below).	D	4	8	4	1	1	1	1	2	1	1	2	1	4	2	2	
San Luis Potosi.....	D			3													
Torreon.....	D		2	6													
Morocco.....	D		4	1				11	6	4	1	1	3	2	1	3	7
Palestine.....	D							2	1					1			
Paraguay: Asuncion.....	D			3		1			2	2	1	1	1	1	1		1
Peru:																	
Poland.....	D	1															
Portugal: Oporto.....	C	11	14	20	16	36	32	22	68	30	46	49	69	61	74	61	49
Rumania.....	C		1	3	2	2		6	5	5	3	1	4		4	2	2
Tunisia: Tunis.....	D	2		3											1		1
Portugal: Oporto.....	C	13	18	38	13	13	13	13	29	25	41	62	83				
Rumania.....	D	1	3	9	1	1	1	2	4	5	1	3	1				
Tunisia: Tunis.....	D	3		3				26		1	1	1			1	13	1

<sup>1</sup> Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal regions.





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER—Continued

[C Indicates cases; D, deaths; P, present]

Place	Week ended—									
	June		July		Aug.		Sept.		October,	
	28- July 1931	29- Aug. 1931	28- July 1931	29- Aug. 1931	23- Aug. 1931	24- Sept. 1931	20- Sept. 1931	21- Oct. 1931	November, 1931	December, 1931
									7 14 21 28	5 12 19 26
Ivory Coast:										
Bobo Dioulasso.....	1									
Grand Bassam.....	D 1									
Kong Circle.....	D 4		4	2	1					
Seguela.....	D 4		P							
Tahim.....	D 4									
Nigeria <sup>1</sup> .....	D 1		1						1 1 1 2	2 2
Senegal:										
Podor (Hinterland).....	D 1		1							
St. Louis.....	D 1		1							
Thies.....	D 1				1					
Sudan (French):										
Macina—Kayo Circle.....	D 4				1					
Togo (French): Atakpame—Anie Circle.....	D 4				1				2 2	1
Upper Volta:										
Banfora.....	D 2								1 1	
Dedougou.....	D 1						2			
Diabakoko.....	D 1						1			
Onagadougou.....	D 1						2			
	D 1				1		1			

<sup>1</sup> Yellow fever was reported in Oshogbo, Nigeria, on Feb. 16, 1932.

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UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES  
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SPECIAL ARTICLE

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Relation of Oxidation to Proteolysis  
in Malignant Tumors



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932



## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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## RELATION OF OXIDATION TO PROTEOLYSIS IN MALIGNANT TUMORS

By CARL VOEGTLIN, *Chief of Division of Pharmacology*, and MARY E. MAVER, *Biochemist, National Institute of Health, United States Public Health Service*

The primary object of this investigation is the study *in vitro* of the proteolytic mechanism of cancer tissue under conditions approaching as closely as possible those obtaining in living animals. It is obvious that results obtained under such conditions are of considerable significance for the understanding of the characteristic biochemical and biological behavior of malignant growth.

Our work with tumors has led to certain observations which seem to throw an entirely new light on tissue proteolysis and has forced us to initiate research of a more general nature, the results of which are also included in this paper.

Besides temperature and enzyme concentration, the most important and generally recognized factor governing the action of proteolytic enzymes is the hydrogen ion concentration of any enzyme system under investigation. Without proper pH control, results have very little meaning. As far as tissue proteolysis is concerned, it would seem, therefore, that results of greatest significance could be obtained by carrying out the proteolysis within the range of the pH characteristic of the tissue in the living animal. There are, however, no published methods which will permit us to estimate with any degree of accuracy the pH of living tissues *in situ*, and pH measurements on excised tissues are obviously subject to grave error. For the work on the malignant tumors used in this research we did rely on pH estimations made recently in this laboratory by Dr. H. Kahler and one of the writers (V.). The results were obtained in the living animal by means of the glass electrode. This method will be described in the near future.

A second and hitherto unrecognized factor in tissue proteolysis, as will be shown by the following experimental evidence, is the oxygen tension under which the proteolysis is carried out. Here also, as in the case of pH, information pertaining to the true oxygen tension in living tissues *in situ* is very inadequate, due to lack of suitable methods. It can safely be stated, however, that the tissue oxygen tension is far below that of atmospheric air. This is shown by the work of

Campbell (1924), who, by injecting nitrogen into the subcutaneous tissue or the peritoneal cavity of living animals, found an oxygen tension, after equilibrium was reached, of 20 to 30 millimeters under the skin and 30 to 40 millimeters in the abdominal cavity. These are figures which approximate the oxygen tension of venous blood. We believe, however, that the oxygen tension in certain tissue areas which are somewhat removed from the blood capillaries may be considerably lower. In this case due consideration must be given to the fact that the oxygen carried by the blood to the tissues must diffuse through the capillary wall and several cell layers. These cells undoubtedly utilize part of the diffusing oxygen, as would be expected from the high reducing power of tissues (Voegtlin, Johnson, and Dyer, 1924). It would seem, therefore, of considerable interest to study the influence of variations in oxygen tension on tissue proteolysis and to work particularly with oxygen tensions within the physiological range. As far as we are aware the experiments to be reported are the first along this line.

#### I. AUTOLYSIS OF MALIGNANT TUMORS

Two standard transplantable rat tumors were employed. The Jensen rat sarcoma was originally received through the kindness of Dr. Carl F. Cori, of the New York State Institute for the Study of Malignant Disease, and was propagated in a strain of albino rats received from the same source. In these rats tumor transplantation is successful in a high percentage of the animals, and the tumors grow to considerable size. Histological examination by Passed Asst. Surg. R. D. Lillie, of the division of pathology and bacteriology of the National Institute of Health, shows that this tumor is composed almost completely of malignant cells. Lillie states:

A richly cellular tumor composed of fusiform and spindle cells presenting moderately hyperchromatic and leptochromatic nuclei, which often exhibit mitoses. The stroma consists of fine and coarse intercellular fibrils. Multiple areas of necrosis, without inflammatory reaction or demonstrable bacteria, are present. The adjacent skeletal muscle is freely invaded and the inclosed muscle fibers are compressed and distorted.

The Walker rat carcinoma 256 was obtained through the courtesy of Dr. George Walker. This tumor originated March 26, 1928, in the breast of a female albino rat. It was received in October, 1930, after having gone through 51 transplantations. We have propagated this tumor by subcutaneous inoculations in the inbred rat strain of the Wistar Institute, in which strain it uniformly gives almost 100 per cent of takes and the tumors very rarely regress. If the tumor-bearing animals are kept until they die, metastases are found in a considerable number of the animals. The histological report on this tumor by Passed Asst. Surg. Lillie follows:

A richly cellular, lobulated tumor, composed of large polygonal epithelial cells having no definite alveolar arrangement and trabeculated by fine and coarse septa of fibrous tissue. The epithelial cells have a comparatively large rim of finely granular acidophilic cytoplasm, large markedly hyperchromatic nuclei, distinct deeply staining nucleoli and frequently exhibit mitoses in various stages. There are multiple areas exhibiting various degrees of necrosis. Bacteria are not demonstrable. One section shows the tumor invading the skeletal muscles with replacement and atrophy of the muscle fibers.

These two transplantable tumors, especially the sarcoma, offer a good opportunity for the study of the proteolysis of cancer tissue, for the reason that they contain only a negligible amount of normal cells and stroma. We are indebted to Associate Pharmacologist J. W. Thompson, of this laboratory, for the supply of tumor animals.

Sufficient fresh tumor tissue was obtained for each experiment by decapitating a few tumor rats and dissecting out the tumors, discarding stroma and macroscopically necrotic appearing tumor tissue. A weighed amount of this tumor material was ground to a pulpy mass in a mortar with pure quartz sand. To this pulp was added about an equal volume of glass-distilled water, and grinding was completed. The material was then filtered through cotton cloth in order to remove any coarse particles and sand. Half a cubic centimeter of this *freshly prepared* tumor extract was placed in each of a series of carefully cleaned pyrex Erlenmeyer flasks of 25-c. c. capacity. There was added then to each flask 2 c. c. of buffer solution prepared from pure chemicals according to McIlvaine (1921). The pH of the digestion mixture was adjusted colorimetrically before and checked after each experiment. As will be noted later, the action of special chemicals ( $\text{CuSO}_4$  and  $\text{H}_2\text{O}_2$ ) was also studied on the autolysis. Sufficient toluene was added to each flask to prevent bacterial growth, and the flasks were stoppered with cotton plugs. Half of the flasks were placed in an incubator at 37° C. in contact with atmospheric air; the other flasks were placed in a large vacuum desiccator which was evacuated by means of a high vacuum pump (Cenco type). Evacuation was carried out for 15 to 30 minutes at room temperature (about 25° C.), and the pressure was measured by a mercury manometer at the beginning and end of the digestion period. The pressures indicated on the graphs refer to those at the end of digestion. The desiccator was then placed in an incubator at 37° C. for 18 to 20 hours.

The degree of proteolysis was estimated by Sørensen's formol-titration method, phenol-phthalein being used as indicator. Duplicate samples were titrated and the values were averaged. The amino nitrogen of the undigested control samples was estimated by the same method and the final values were expressed as increase in amino nitrogen above that of the undigested controls.

The results of these experiments are illustrated by the activity-pH curves in Charts 1 and 2. The optimum of proteolysis under atmos-

pheric as well as reduced oxygen tension lies between pH 4 and pH 6. There will be noted a strikingly greater degree of proteolysis in the samples exposed to a reduced oxygen pressure. As the pH is increased above 6, the degree of proteolysis rapidly decreases and reaches a very low level between pH 7 and pH 8. It furthermore is significant that the two curves representing high and low oxygen tensions approach each other with increasing pH. From these curves we may conclude that proteolysis of the proteins of these two malignant tumors is near the minimum in the pH range characteristic of these tumors *in vivo*,

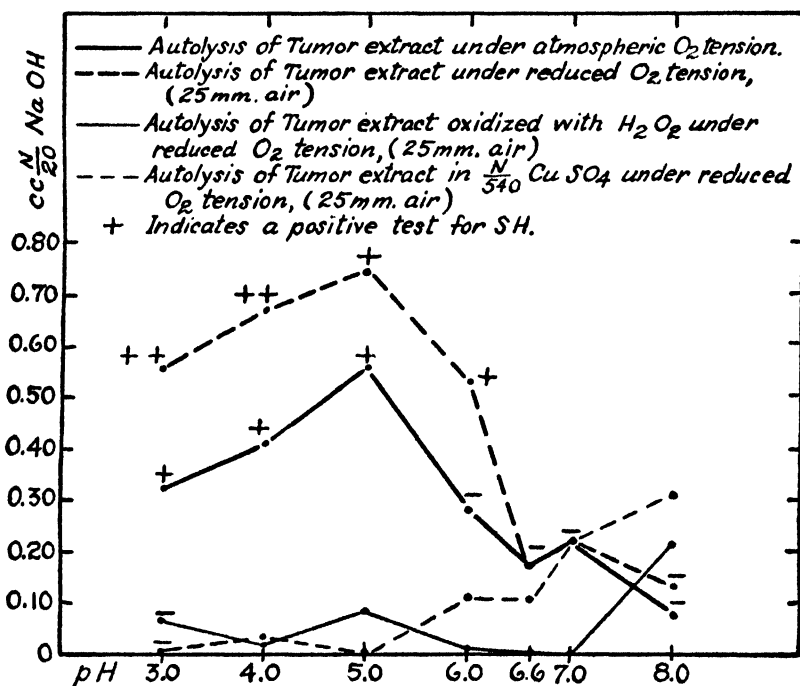


CHART 1.—The autolysis of Waller carcinoma. The digestion mixtures contained 0.5 c. c. of a water extract of tumor and 2 c. c. of buffer. The tumor extract was oxidized by adding 4 c. c. of perhydrol to 30 c. c. of tumor extract. The addition of 0.2 c. c. of N/40 CuSO<sub>4</sub> to each flask caused a marked inhibition of proteolysis. The curves represent the net increases in amino N, as determined by the formol titration with N/20 NaOH, after 18 hours at 37° C. at different hydrogen ion concentrations

i. e., pH 6.6 to 6.8, and in the approximate oxygen tension range of mammalian tissues *in situ*.

Is this low degree of proteolysis in the physiological pH and oxygen tension range due to the absence of a proteolytic enzyme acting under these conditions or to the absence of a suitable substrate? In order to test the latter possibility, blood fibrin was added to the Jensen tumor extract; for it was observed that the Walker carcinoma in most experiments showed slightly higher values under the above conditions than the Jensen tumor, and microscopical study showed that the

former tumor contains more fibrous tissue than the latter. The isoelectric point of blood fibrin is at about pH 7. The fibrin was purchased from Merck & Co. It was thoroughly powdered in a ball mill, suspended in distilled water plus some toluene, and ground again in the ball mill until an even suspension was obtained. The proteolysis of the Jensen sarcoma in the presence of added fibrin is illustrated by Chart 3. The graph shows that this tumor contains a proteolytic enzyme which can digest fibrin at about pH 7. There is another pH optimum at about pH 5 under reduced oxygen tension. It is also

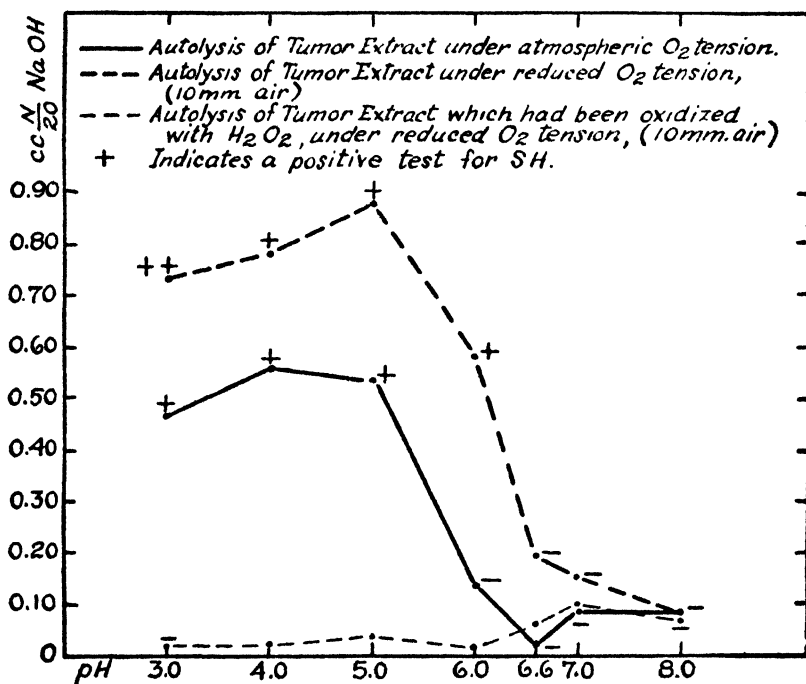


CHART 2.—The autolysis of Jensen sarcoma. The digestion mixtures contained 0.5 c. c. of water extract of tumor and 2 c. c. of buffer. The tumor extract was oxidized by adding 4 c. c. of perhydroly to 30 c. c. of tumor extract.

significant that the latter optimum is at a much higher level than that at pH 7.

In view of the recently established interesting function of reduced glutathione as an activator of proteolytic enzymes of the cathepsin type (Grassmann, Dyckerhoff, and v. Schoenebeck, 1929; Waldschmidt-Leitz, Purr, and Balls, 1930) it appeared possible that the sulphhydryl compounds occurring in these tumors may play a governing rôle in these autolysis experiments. Unpublished data by Dr. J. M. Johnson and one of us (V.) show that these tumors contain considerable quantities of reduced and practically no oxidized glutathione. They also contain in considerable amounts SH groups at-



tached to protein, as judged from the strongly positive nitroprusside test of fresh tumor material from which the glutathione has been removed by repeated washing with distilled water.

In a recent paper (Voegtlin, Johnson, and Rosenthal, 1931) it was shown that the oxidation of reduced glutathione is powerfully catalyzed by minute quantities of copper, which occurs in practically all tissues in greater or lesser amounts. This catalysis proceeds very

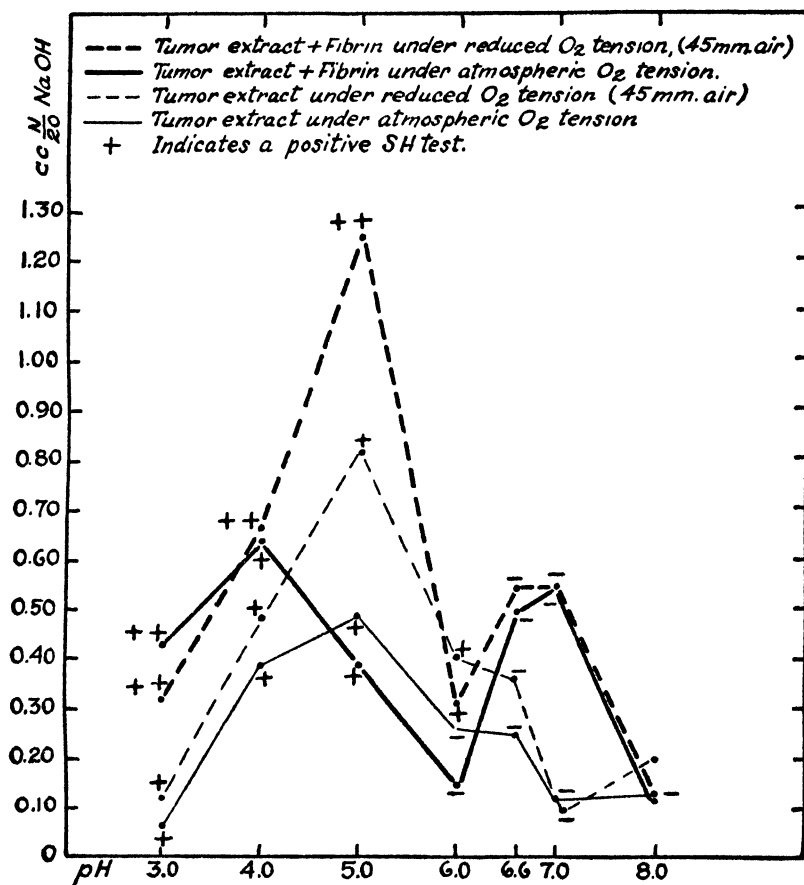


CHART 3.—The proteolysis of fibrin by Jensen sarcoma. The digestion mixtures contained 0.5 c. c. of a water extract of tumor and 2 c. c. of buffer. The addition of 0.5 c. c. of a 10 per cent suspension of blood fibrin caused a marked increase of proteolysis at pH 6.6-7.0 and at pH 5.0

rapidly within the physiological pH range in the presence of oxygen, but in strongly acid solutions the copper-glutathione complex is quite stable. Furthermore, it is known that the reduced glutathione in tissue extracts, on standing in contact with oxygen, is gradually oxidized (Hopkins and Elliott, 1931). These considerations made it desirable to test the tumor digests before and after incubation by means of the nitroprusside test for the presence or persistence of sub-

stances containing SH groups. Before incubation the fresh material always showed a fairly strong test, irrespective of the pH of the buffer used. After digestion the test was strongly positive in the aerobic set at pH 3, and the intensity of the test decreased with increasing pH and became negative at pH 6 and above. The same relation between pH and nitroprusside test was found in the samples digested under greatly reduced oxygen tension, except that the test was stronger in the acid range and positive tests were obtained at a higher pH than with the aerobic samples. The intensity of these tests is indicated in Charts 1 and 2 by + and - signs. There appears to be, therefore, a relation between the presence and persistence of sulphydryl compounds, the oxygen tension and pH under which the proteolysis proceeds, and the degree of proteolysis. Conditions which favor the persistence of SH groups—i. e., a relatively high hydrogen ion concentration and low oxygen tension—are favorable for proteolysis. Further evidence supporting this conclusion is the fact that, when the SH groups of the tumor extract are oxidized by running a current of air through it until the nitroprusside test becomes negative, the tumor material exhibits practically no proteolysis over the pH range from 3 to 8 under atmospheric or reduced oxygen pressure. Similarly, if the SH groups of the extract are oxidized by  $\text{H}_2\text{O}_2$  before the samples are set up, no appreciable proteolysis occurs. (See Charts 1 and 2.)

The addition of copper sulphate has the same effect.

So far the results do show clearly that in the autolysis of tumors SH groups play a considerable rôle. They indicate that not only reduced glutathione but also SH groups attached to proteins favor proteolysis. In view of the prevalence of these protein sulphydryl groups in practically all tissues, it seemed of great importance to establish their function in proteolysis beyond doubt. The following experimental evidence will serve this purpose.

## II. THE ACTION OF PAPAIN

*A. Digestion of coagulated egg white.*—The important researches of Willstätter and his school have revealed a fairly close parallelism between the action of certain proteases of animal tissues (cathepsin) and their analogue in plants—i. e., papain. In the case of papain it has been known for many years that the presence of  $\text{HCN}$  or  $\text{H}_2\text{S}$  greatly increases proteolysis. A similar action is exerted by cysteine and reduced glutathione, whereas the corresponding disulphides are inactive (Grassmann, Dyckerhoff, and v. Schoenebeck, 1929).

For the following experiments commercial papain (Merck) was employed. This material was purified in the following way:

Twenty-five grams of the commercial enzyme were treated with 1,700 c. c. of N/30 disodiumcitrate (pH 5) and allowed to digest three days at  $37^\circ \text{C}$ . in the presence of 120 mg. SH glutathione, toluene

being added to prevent bacterial growth. The glutathione was added in order to activate the enzyme, so that it would digest as much as possible of the protein of the commercial product. A brownish solution containing only a very small amount of solid particles was thus obtained. After filtration, the filtrate was concentrated in a vacuum desiccator. The enzyme was then precipitated by the addition of 10 volumes of 95 per cent alcohol. The white precipitate was separated by centrifugation and filtration and was thoroughly dried *in vacuo*. This method is a modification of that used by Willstätter and Grassmann (1924).

The substrate selected for the determination of the function of protein sulphydryl groups was egg white from fresh eggs. It has been shown by Heffter (1907), Harris (1923), and Abderhalden and Wertheimer (1923) that the native proteins of egg white do not give a positive nitroprusside test for SH groups. If, however, the egg white is quickly coagulated by heating to about 90° C., then the denatured proteins give a strong nitroprusside test. The intensity of the test depends to some extent on the length of heating. We have tested the protein filtrate obtained by treating fresh or coagulated egg white with 10 per cent trichloroacetic acid for the presence of substances containing SH or S-S groups with negative results. This clearly shows that the SH groups of coagulated egg white must be part of the protein molecule and that they are formed as a result of a change in the chemical constitution of these proteins produced by heat. Once formed, these protein sulphydryl groups, which will be designated henceforth as PSH, under suitable conditions are subject to oxidation. We have employed three different methods for this purpose. First,  $H_2O_2$  added to coagulated egg white readily oxidizes the PSH groups. Second, the addition of  $CuSO_4$  to coagulated egg white also causes an oxidation of the PSH groups. Third, aeration of the coagulated egg white at 37° C. for several hours leads to the oxidation of the PSH groups. On chemical grounds this last method is probably the mildest and the least objectionable treatment.

On the basis of these considerations it is possible to determine (a) the influence of atmospheric or reduced oxygen tensions on the action of papain on freshly coagulated egg white containing PSH groups, and (b) the action of papain on coagulated egg white whose PSH groups have been oxidized by air,  $H_2O_2$ , or  $CuSO_4$ .

The coagulated egg white was prepared by diluting fresh egg white with two volumes of 0.8 per cent NaCl solution with vigorous stirring. The solution was then placed in a beaker on a water bath. The material was then stirred vigorously by a mechanical stirring device and was rapidly brought to about 90° C. As soon as samples of the coagulated material yielded a deep purple nitroprusside test, the beaker and its contents were rapidly cooled and the coarser particles

removed by filtration through a coarse cotton cloth. The resulting suspension was either used immediately for a digestion experiment or it was first treated by air in the manner indicated above. Digestion was carried out at 37° C., and the same buffer solutions were used for adjusting the pH as in the tumor experiments.

The results are illustrated by Chart 4. The + or - signs on the curves indicate the presence or absence of PSH groups at the end of the digestion period.

The following conclusions may be drawn from this evidence. Chart 4 shows that there is considerable digestion of freshly coagulated

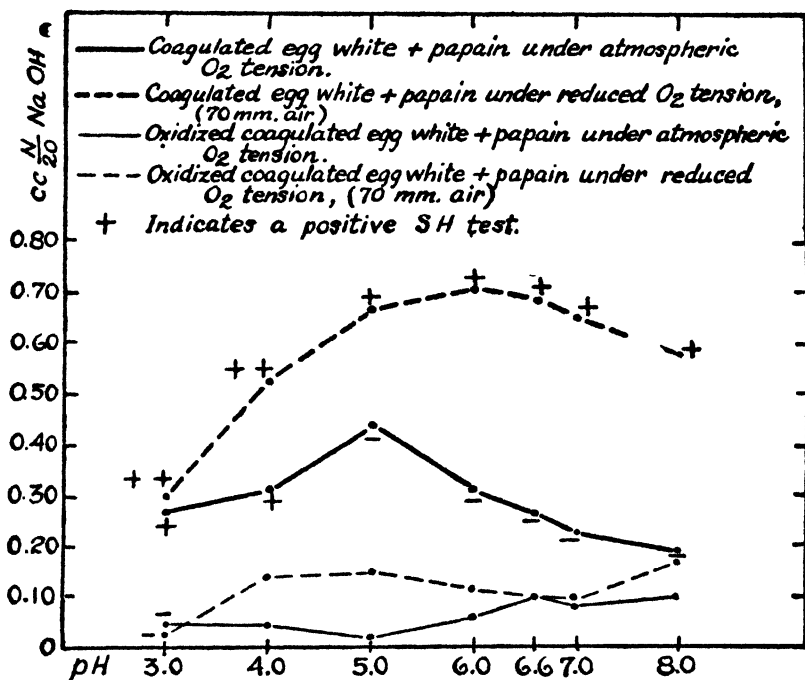


CHART 4.—The proteolysis of coagulated egg white by papain. The digestion mixtures contained 1 c. c. of coagulated egg white + 4.8 mg. papain in 0.5 c. c. H<sub>2</sub>O + 2 c. c. buffer. The coagulated egg white was oxidized by exposure to air at 37° C. for 20 hours or until the nitroprusside test for sulphhydryl was negative

egg white by papain, under atmospheric O<sub>2</sub> tension. This confirms the results of other workers. (See literature: Willstätter, Grassmann, and Ambros, 1926.) The new finding is that digestion is strikingly increased if the O<sub>2</sub> tension is lowered. The two lower curves in Chart 4 indicate that only a slight proteolysis occurs if the egg white, after coagulation, is treated with air until the nitroprusside test becomes negative, and this oxidized material is tested with papain under identical conditions. Hence, it is obvious that there exists a definite relation between the degree of proteolysis and the presence of PSH groups. Under reduced O<sub>2</sub> tension these groups are

still present in the freshly coagulated egg white at the end of digestion. As in the tumor experiments, there is again a tendency for diminution of PSH concentration with increasing pH under reduced and even more so under atmospheric  $O_2$  tension. Moreover, experiments, which will not be described here, indicate that if the egg white is coagulated, but not exposed for a sufficiently long time to the high temperature, the nitroprusside test is less pronounced and the degree of proteolysis is correspondingly lower. Treatment of coagulated egg white with  $H_2O_2$ , which oxidizes the PSH groups, also almost completely abolishes proteolysis. The same inhibition of proteolysis is also observed when  $CuSO_4$  is added to the digestion mixture containing freshly prepared coagulated egg white. We have confirmed the observation of previous workers that uncoagulated egg white is very little digested by papain. It will be remembered that fresh uncoagulated egg white does not contain SH groups.

Without going into a further discussion of these results, it may be said that these experiments furnish clear evidence that the oxygen tension and pH are regulating factors in the digestion of coagulated egg white, which contains PSH groups.

*B. Digestion of fibrin and gelatin in the presence of glutathione.*—The preceding experiments dealt with the influence of  $O_2$  tension and pH on the proteolysis of a system containing protein SH groups. In the following experiments the influence of  $O_2$  tension and pH was studied on systems containing SH groups in the form of reduced glutathione. As previously stated, it has been found by Waldschmidt-Leitz (1930) and Grassmann (1929) that reduced glutathione promotes the action of papain and cathepsin. Oxidized glutathione, according to Grassmann (1929), is inactive. The activating property of glutathione in proteolysis is therefore due to the SH groups.

The crystalline reduced glutathione was prepared according to Hopkins (1929) by Dr. J. M. Johnson of this laboratory. We are also indebted to him for the iodometric estimations of glutathione referred to later on. The same kind of papain was used as in the preceding experiments. Merck's blood fibrin and commercial gelatin were used as substrates. The technique in other respects was unchanged.

The results are illustrated by Charts 5 and 6. The evidence is clear in showing that, generally, proteolysis in the presence of reduced glutathione is very much greater under reduced than under atmospheric  $O_2$  tension. The figures for the reduced glutathione remaining at the end of the digestion period are given in the upper part of Chart 5. These figures and others from additional experiments indicate that the small amount of added reduced glutathione (1.5 mg.) is completely oxidized at the end of digestion in the higher pH range, whereas with increasing acidity there is still some reduced material left. The digests exposed to a reduced  $O_2$  tension show essentially the same relation-

ship to the pH, except that the SH values are considerably higher in the lower pH range.

#### DISCUSSION

The hydrolysis of proteins, whether brought about by means of strong acids, alkalis, or enzymes, is considered to consist essentially

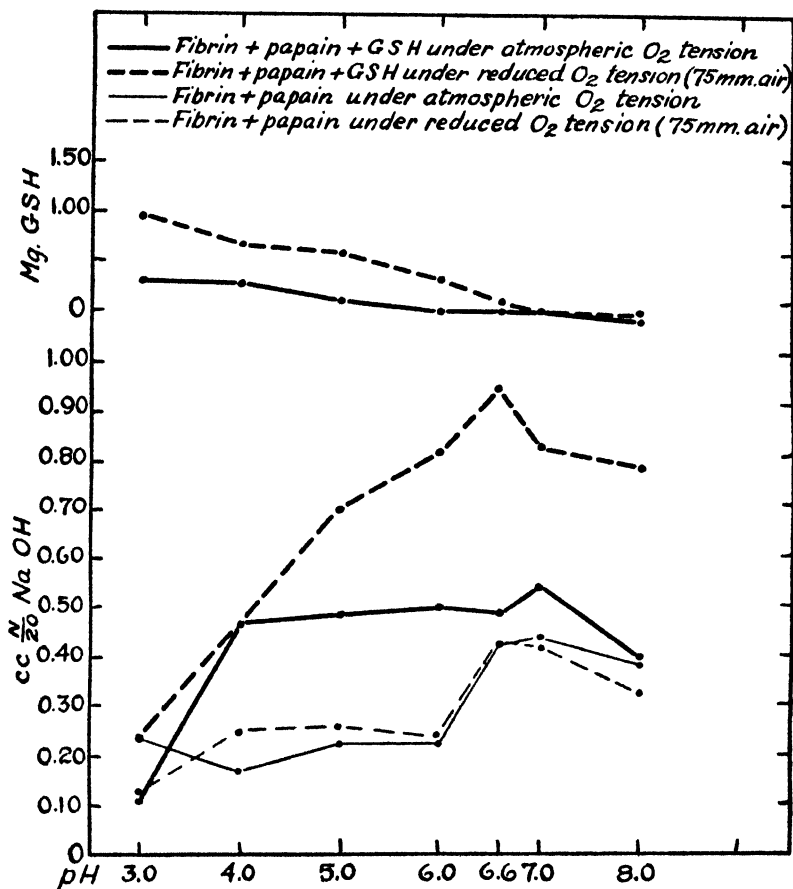
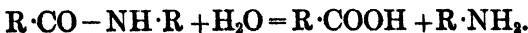


CHART 5.—The proteolysis of fibrin by papain plus glutathione. The digestion mixtures contained 1 c. c. of a 10 per cent suspension of fibrin and 4.8 mg. papain contained in 0.5 c. c.  $H_2O + 2$  c. c. buffer. The addition of 1.5 mg. reduced glutathione to each flask caused a marked increase in proteolysis under conditions of reduced  $O_2$  tension. The upper curves demonstrate the greater stability of the glutathione in these digestion mixtures under reduced  $O_2$  tension, 18 hours at  $37^\circ C$ . Correction was made for the original amino N titration of the added glutathione

in the cleavage of peptide linkages with the addition of the components of water, thus,



Strictly speaking, this reaction is a true hydrolysis and is not connected with oxidation-reduction processes. The degradation of the

proteins in tissues is brought about by catalysts, i. e., the proteolytic enzymes. The latter can be separated more or less from the other chemical tissue components and their proteolytic activity on proteins can be studied *in vitro*. Results obtained in this manner are of great scientific interest, but it is obvious that they are only of restricted value for an understanding of proteolysis as it occurs in the living

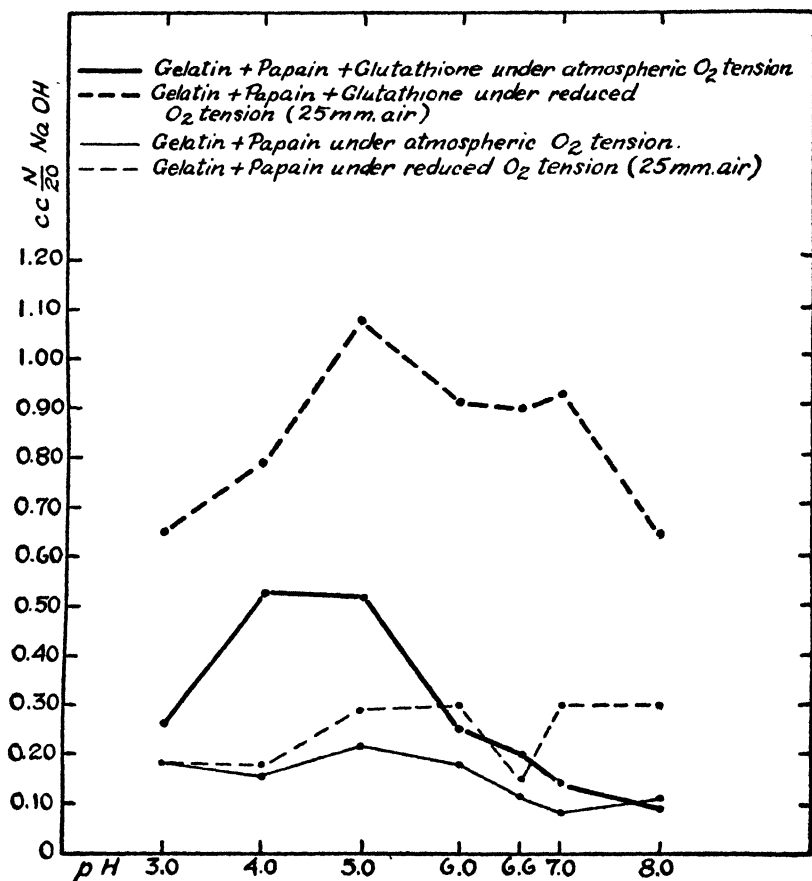


CHART 6.—The proteolysis of gelatin by papain plus glutathione. The digestion mixtures contained 1 c. c. of 12 per cent gelatin and 1.2 mg. papain in 0.5 c. c. H<sub>2</sub>O+2 c. c. buffer. A great increase in proteolysis was caused by the addition of 1.5 mg. reduced glutathione particularly under conditions of reduced O<sub>2</sub> tension. Correction was made for the original amino N titration of the added glutathione

animal. This fact was recognized by Bradley and Taylor (1916) in their studies on autolysis with reference to the influence of changes in the acidity of the digests. It was stated in the introduction to this paper that tissue proteolysis should be studied by methods which closely approximate the conditions in the living animal. It will be evident from the experimental results here reported that this viewpoint is fully justified. It has led to the recognition of the O<sub>2</sub> tension

as a controlling factor in the proteolysis of cancer tissue *in vitro*. The experimental evidence clearly shows that in this case tissue proteolysis is promoted when digestion proceeds under greatly reduced  $O_2$  tension—in other words, under conditions comparable to those found in the tissues. This fact alone is sufficient to postulate in tissues a relation between oxidation-reduction and proteolytic processes. Additional evidence presented in this paper further indicates that the sulphhydryl system of tissues plays an important part in this relation between oxidation-reduction and proteolysis. Cancer tissues, as well as normal tissues, contain glutathione in the reduced form and proteins containing SH groups. It can be shown that these SH groups are readily oxidized if the tissues are exposed to molecular oxygen. There is good reason to believe that this oxidation of SH groups is catalyzed by minute traces of heavy metals, such as copper, which occur in all tissues. Our experiments show that oxidation of these SH groups results in a striking decrease in tissue proteolysis. On the other hand, if the conditions for the digestion are such that the SH concentration is only slowly reduced, then proteolysis is promoted. We have seen that a shift toward increasing hydrogen ion concentration and a reduction in  $O_2$  tension tend to retard the oxidation of the SH groups. This relationship has been demonstrated not only in cancer tissue proteolysis, but also in the experiments on the proteolytic action of papain. It would, therefore, appear to have a more general significance.

The experiments described in this paper concern themselves exclusively with the determination of the degree of proteolysis at the end of 18 to 20 hours. Further work, which is in progress, deals with the rate of proteolysis and equilibrium conditions. It is hoped that a clearer understanding of the factors which regulate proteolysis in tissues may lead to a successful demonstration of the synthesis of tissue proteins.

Finally, a few remarks on the bearing of these results on the cancer problem may not be amiss. The work of Warburg and his coworkers (1926) has produced the following important results: First, malignant tumors *in vitro* derive most of their energy from the conversion of glucose into lactic acid. Second, in confirmation of Cori and Cori (1925), it is found that the venous blood coming from malignant tumors contains more lactic acid and less glucose than other venous blood. Third, malignant cells survive *in vitro* for a day or even longer under anaerobic conditions, indicating that cancer tissue is much more resistant to lack of  $O_2$  supply. All of this work has placed great emphasis on the carbohydrate metabolism of tumors as compared with normal tissues. The investigation of the protein metabolism of tumors has received scant attention, perhaps for the reason that most efforts were devoted to a demonstration of a qualitative



difference between the protein metabolism of malignant and that of normal tissues. Such a difference may exist, but so far it has not been demonstrated. However, it is obvious that the progressive cellular growth and accompanying cell death characteristic of malignant tumors must involve the building up and breaking down of proteins. Malignant growth is disordered growth in the sense that the organization of the malignant tissue is not so nicely adjusted for physiological purposes as the organization of normal tissues. In many tumors it is evident that certain portions do not contain an adequate vascular supply. It may be assumed, therefore, that in these locations, due to deficient blood circulation, there would accumulate lactic acid in sufficient concentration so as to cause an appreciable local increase in hydrogen ion concentration. Malignant cells in such regions will die as a result of inadequate food supply and possibly also due to the increased hydrogen ion concentration. There would thus be established conditions (low pH and low  $O_2$  tension) which, according to our *in vitro* experiments, favor proteolysis. The products of proteolysis could then either be absorbed by intact blood vessels on the periphery of the necrotic area or they could be utilized by adjoining living tumor cells for growth and multiplication. It may perhaps not lead us too far from the basis of experimental facts if we also point out that increased hydrogen ion concentration and low oxygen tensions are conditions which favor the persistence of reduced glutathione. The latter substance apparently has a stimulating influence on cell division (Voegtlin and Chalkley, 1930, 1932). Similar considerations might also be applied to the explanation of the destructive action of tumors on the surrounding normal tissue. These problems are under investigation in this laboratory.

There can be little doubt that the mechanism of protein metabolism of normal and malignant tissues is far more complex than has been hitherto assumed.

#### SUMMARY

1. For the proper understanding of the proteolytic mechanism of the tissues in living animals it is essential to perform experiments *in vitro* under conditions approximating those *in vivo*. An attempt in this direction has been made in the case of malignant tissues by reducing the  $O_2$  tension and adjusting the hydrogen ion concentration accordingly.

2. The *in vitro* autolysis of two malignant tumors shows that both pH and  $O_2$  tension are controlling factors in tissue proteolysis. These factors apparently operate through their influence on the sulphhydryl system of the tissues.

3. Evidence is produced, which indicates that not only glutathione, but also proteins containing SH groups, are concerned in tissue proteolysis. Confirmatory evidence is obtained from experiments dealing

with (a) the digestive action of papain on coagulated egg white containing protein SH groups, and (b) the action of papain on gelatin and fibrin in the presence of reduced glutathione.

4. The results afford substantial proof for the coupling of oxidation-reduction and proteolysis in tissues.

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## DEATH RATES IN A GROUP OF INSURED PERSONS

### Rates for Principal Causes of Death for January, 1932

The accompanying table, taken from the Statistical Bulletin for February, 1932, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial insurance department of the company for January, 1932, as compared with that for December, 1931, and that for the corresponding month of last year. It also gives a comparison of the rates for the years 1930 and 1931. The rates for this group of persons in recent years are based on numbers varying between 17,000,000 and 19,000,000. Within the last few years the general death rates among these insured persons have averaged about 72 per cent of the death rate for the registration area of the United States.

The Bulletin states:

In no previous January have health conditions among these policyholders been as good as those which prevailed during the first month of 1932. The death rate was 8.7 per 1,000—7.6 per cent lower than the previous low point for

any January on record for this company (0.4 in 1927). In January a year ago, when there was widespread prevalence of influenza, the mortality rate was 9.9 per 1,000. Insured wage earners in all sections of the United States, as well as those in Canada, have shared in the unprecedentedly low January mortality rate.

Each of the important causes of death, except cancer, suicides, and automobile fatalities, recorded a lower death rate in January than in the corresponding month of last year. The remarkably low figure for tuberculosis (67.7 per 100,000), is particularly noteworthy. This figure has never been closely approached during the corresponding month of any previous year. It augurs well for the continuance of the downward course of the tuberculosis mortality rate during the remainder of 1932. The heart-disease rate is lower by 10.8 per cent than in January, 1931, and large reductions are in evidence for the following: Influenza (48.8 per cent), cerebral hemorrhage (12.5 per cent), pneumonia (32.0 per cent), other respiratory conditions (23.2 per cent), diarrheal diseases (23.4 per cent), puerperal conditions (10.8 per cent), and accidents (8.9 per cent). Each of the four principal communicable diseases of childhood also registered a lower mortality rate than for the corresponding month a year ago.

The suicide death rate rose from 7.7 in January, 1931, to 8.7 in 1932.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial insurance department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	January, 1932	Decem- ber, 1931	January, 1931	Year	
				1931	1930
Total, all causes.....	870.0	821.8	989.5	876.4	873.5
Typhoid fever.....	1.5	3.0	1.4	2.4	2.4
Measles.....	2.2	1.5	2.6	3.2	2.9
Scarlet fever.....	2.3	3.9	3.3	3.2	2.5
Whooping cough.....	2.7	2.3	4.0	3.6	4.3
Diphtheria.....	6.1	6.4	6.8	4.5	5.9
Influenza.....	15.5	11.0	30.3	21.1	14.8
Tuberculosis (all forms).....	67.7	64.9	78.0	76.2	80.9
Tuberculosis of respiratory system.....	60.1	58.7	69.9	67.2	70.4
Cancer.....	83.4	85.4	81.6	84.0	78.2
Diabetes mellitus.....	22.1	21.8	23.5	21.1	18.4
Cerebral hemorrhage.....	65.7	58.7	75.1	60.4	60.4
Organic diseases of heart.....	156.7	144.2	175.6	147.9	144.9
Pneumonia (all forms).....	83.6	68.4	122.9	73.7	75.7
Other respiratory diseases.....	10.6	9.1	13.8	9.8	10.9
Diarrhea and enteritis.....	8.5	9.4	11.1	15.7	20.4
Bright's disease (chronic nephritis).....	72.6	66.9	74.6	67.0	68.1
Puerperal state.....	9.9	11.5	11.1	11.7	12.1
Suicides.....	8.7	11.0	7.7	10.0	9.8
Homicides.....	6.2	6.8	6.8	7.0	6.7
Other external causes (excluding suicides and homi- cides).....	53.0	53.9	58.2	60.7	62.5
Traumatism by automobiles.....	23.3	22.4	21.7	22.0	20.9
All other causes.....	190.7	181.4	200.9	193.2	191.7

<sup>1</sup> All figures in this table include insured infants under 1 year of age. The rates for 1931 and 1932 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Death from Rocky Mountain spotted fever caused by tick bites held compensable under workmen's compensation act.*—(Idaho Supreme Court; *Reinoehl v. Hamacher Pole and Lumber Co. et al.*, 6 P. (2d) 860; decided Dec. 8, 1931.) In a proceeding under the workmen's compensation law, compensation was sought for the death of an em-

ployee from Rocky Mountain spotted fever. It was found that the employee, a swamper for a lumber company, had been bitten by ticks, which bites resulted in Rocky Mountain spotted fever from which death ensued. The law provided for compensation in the case of a "personal injury by accident arising out of and in the course of" employment. The supreme court, in granting compensation, summed up its conclusions in the following language:

The tick bite, or bites, the injury, or injuries, that caused the Rocky Mountain spotted fever resulting in the workman's death in the instant case was, therefore, an "accident," since it was in the ordinary and popular sense of the term and [an] unlooked-for mishap which was neither expected nor designed. The fact that the accidental injury results in a disease does not alter the nature or the consequential results of such injury. *Brintons v. Turvey*, supra. We therefore hold that deceased received "a personal injury by accident arising out of and in the course of his employment."

### DEATHS DURING WEEK ENDED FEBRUARY 27, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended February 27, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Feb. 27, 1932	Corresponding week, 1931
Policies in force.....	73, 951, 428	75, 133, 159
Number of death claims.....	13, 563	16, 973
Death claims per 1,000 policies in force, annual rate.....	9. 6	11. 8
Death claims per 1,000 policies, first 8 weeks of year, annual rate.....	9. 9	11. 3

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended February 27, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Feb. 27, 1932				Corresponding week, 1931		Death rate <sup>1</sup> for the first 8 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	8, 962	12. 9	610	51	14. 0	936	12. 1	14. 3
Akron.....	27	5. 3	2	26	8. 3	8	7. 7	8. 8
Albany <sup>1</sup> .....	30	12. 0	2	41	17. 4	2	14. 7	16. 1
Atlanta <sup>1</sup> .....	85	15. 7	10	97	16. 2	6	14. 9	16. 5
White.....	44	12. 3	3	44	13. 3	2	11. 7	13. 4
Colored.....	41	22. 4	7	200	21. 8	4	21. 9	22. 0
Baltimore <sup>1</sup> .....	244	18. 6	23	78	16. 6	26	14. 1	17. 8
White.....	178	13. 7	12	54	15. 1	21	12. 9	16. 4
Colored.....	69	24. 0	10	161	22. 7	5	18. 3	22. 6
Birmingham <sup>1</sup> .....	69	13. 0	4	42	15. 1	9	12. 4	14. 9
White.....	40	12. 3	3	49	13. 1	4	10. 5	11. 3
Colored.....	29	14. 4	1	27	18. 3	5	15. 6	23. 7

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended February 27, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Feb. 27, 1932				Corresponding week, 1931		Death rate for the first 8 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Boston.....	243	16.1	15	45	15.9	21	15.1	17.6
Bridgeport.....	37	13.1	0	0	14.2	3	11.8	14.4
Buffalo.....	136	12.1	10	48	18.6	26	13.0	15.5
Cambridge.....	29	13.2	8	62	12.8	5	13.6	14.0
Camden.....	31	13.6	2	35	18.0	8	14.4	19.0
Canton.....	25	12.1	3	75	15.6	1	9.7	11.5
Chicago.....	802	11.9	43	42	11.9	97	11.1	12.6
Cincinnati.....	124	14.0	3	19	21.9	16	15.9	18.7
Cleveland.....	207	11.8	19	62	12.3	16	11.0	12.2
Columbus.....	74	12.9	6	60	15.3	8	14.7	14.6
Dallas.....	75	13.9	7	—	13.7	8	11.5	12.8
White.....	60	13.4	7	—	11.8	6	10.9	11.6
Colored.....	15	16.1	0	—	23.1	2	14.2	18.4
Dayton.....	44	9.7	5	72	14.6	8	11.4	12.4
Denver.....	89	15.8	8	78	15.2	11	17.0	16.0
Des Moines.....	33	11.8	1	17	11.9	1	12.4	12.3
Detroit.....	283	8.6	23	41	11.4	70	8.4	9.8
Duluth.....	20	10.3	1	29	14.9	3	10.2	12.4
El Paso.....	24	11.7	1	—	14.9	3	15.3	19.4
Erie.....	22	9.7	2	42	12.4	1	10.7	12.0
Fall River.....	30	13.6	0	0	12.6	4	12.8	13.6
Flint.....	34	10.4	4	59	10.2	8	8.7	7.5
Fort Worth.....	31	9.5	3	—	9.0	0	10.7	11.3
White.....	28	10.2	3	—	8.9	0	10.0	10.6
Colored.....	3	5.9	0	—	9.6	0	14.2	14.6
Grand Rapids.....	32	9.6	0	0	9.4	5	8.5	9.5
Houston.....	67	10.8	6	—	12.4	9	10.9	12.3
White.....	46	10.1	3	—	12.6	6	10.2	11.2
Colored.....	21	12.8	3	—	11.9	3	12.6	14.7
Indianapolis.....	124	17.3	12	97	16.9	10	13.6	15.6
White.....	108	16.4	10	92	17.2	10	13.0	15.1
Colored.....	21	23.8	2	137	15.0	0	18.4	18.9
Jersey City.....	57	9.3	5	41	12.4	7	10.8	14.6
Kansas City, Kans.....	27	11.4	5	111	21.6	5	12.9	17.6
White.....	20	10.4	2	54	20.5	5	12.3	16.3
Colored.....	7	15.4	3	884	26.6	0	15.7	23.3
Kansas City, Mo.....	112	14.1	5	87	17.3	13	12.8	15.5
Knoxville.....	30	14.0	2	51	16.2	6	11.7	14.9
White.....	21	11.7	1	28	13.1	4	10.9	13.6
Colored.....	9	25.7	1	270	32.2	2	15.7	21.2
Long Beach.....	39	12.7	1	0	9.6	2	11.5	10.4
Los Angeles.....	333	12.6	19	56	13.1	34	12.6	12.3
Louisville.....	79	13.4	8	73	16.4	6	14.4	17.4
White.....	54	10.3	6	63	15.6	6	12.7	15.6
Colored.....	25	27.3	2	149	20.8	0	23.8	27.2
Lowell.....	28	14.6	3	78	14.0	4	15.3	14.7
Lynn.....	28	14.2	1	28	10.2	2	11.8	13.0
Memphis.....	74	14.7	7	76	19.7	9	17.0	17.0
White.....	24	7.7	1	17	16.0	4	12.6	14.5
Colored.....	50	26.0	6	181	25.8	5	24.2	21.2
Miami.....	26	11.9	0	0	17.6	8	12.9	14.1
White.....	21	12.4	0	0	14.9	0	12.5	13.5
Colored.....	5	10.3	0	0	26.8	8	14.5	16.2
Milwaukee.....	115	10.0	10	48	10.3	12	9.4	11.0
Minneapolis.....	129	14.0	11	72	12.5	7	11.0	12.5
Nashville.....	63	17.7	5	75	25.8	8	14.0	18.2
White.....	34	15.6	3	59	23.1	5	13.4	15.9
Colored.....	19	23.2	2	125	32.9	3	15.7	24.4
New Bedford.....	36	16.7	5	144	16.2	2	13.2	14.1
New Haven.....	50	16.1	1	20	14.7	2	13.1	13.5
New Orleans.....	141	15.5	17	97	19.6	12	15.4	20.6
White.....	84	13.0	10	87	15.4	6	12.8	17.0
Colored.....	57	21.7	7	114	30.2	6	21.6	29.5
New York.....	1,604	12.3	115	51	12.3	166	11.0	14.2
Bronx Borough.....	236	8.9	14	40	9.4	23	8.3	10.3
Brooklyn Borough.....	563	11.0	50	55	10.8	73	10.0	13.3
Manhattan Borough.....	631	13.6	37	53	19.8	49	16.9	21.5
Queens Borough.....	207	8.9	12	50	7.4	18	7.3	9.5
Richmond Borough.....	57	17.3	3	39	12.4	5	14.1	14.5
Newark, N. J.....	98	10.8	6	33	11.8	8	11.6	14.4

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended February 27, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931.—Continued*

City	Week ended Feb. 27, 1932				Corresponding week, 1931		Death rate for the first 8 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Oakland.....	68	11.9	2	25	10.5	2	11.8	11.7
Oklahoma City.....	35	8.9	1	14	11.1	3	9.9	11.6
Omaha.....	57	13.6	4	45	18.5	8	15.5	15.0
Faterson.....	24	9.0	1	18	22.2	3	12.4	16.4
Peoria.....	29	13.6	3	83	12.5	1	12.6	14.9
Philadelphia.....	499	13.2	26	40	14.7	51	12.7	16.9
Pittsburgh.....	249	19.1	22	101	18.6	18	14.6	18.3
Portland, Oreg.....	69	11.6	4	51	12.7	3	12.5	12.9
Providence.....	78	15.9	6	58	17.2	8	14.8	16.4
Richmond <sup>1</sup> .....	52	14.7	1	15	17.3	4	15.3	18.6
White.....	35	13.8	1	22	15.1	2	12.9	18.6
Colored.....	17	16.8	0	0	22.7	2	21.2	26.1
Rochester.....	91	14.2	7	67	17.3	7	11.9	14.3
St. Louis.....	231	14.5	6	21	20.4	17	14.1	19.2
St. Paul.....	50	11.0	2	21	9.4	6	10.6	10.7
Salt Lake City <sup>2</sup> .....	43	15.5	4	63	12.8	3	12.6	12.1
San Antonio.....	69	14.6	6		14.6	14	14.7	15.4
San Diego.....	55	17.6	4	87	14.0	1	17.2	16.3
San Francisco.....	170	13.4	9	62	13.7	7	14.5	14.5
Schenectady.....	21	11.4	1	29	13.6	5	11.5	12.2
Seattle.....	102	14.2	3	30	13.0	8	12.3	12.5
Somerville.....	20	9.8	0	0	14.9	4	9.9	12.7
South Bend.....	14	6.6	1	29	12.1	1	8.6	8.7
Spokane.....	29	13.0	2	53	13.5	1	12.4	12.9
Springfield, Mass.....	31	10.5	2	34	16.8	3	12.0	14.2
Syracuse.....	40	9.7	3	39	13.0	3	11.7	13.6
Tacoma.....	30	11.5	3	83	13.5	3	12.5	14.3
Tampa <sup>3</sup> .....	25	12.1	2	57	14.9	3	11.5	16.0
White.....	22	13.5	2	70	12.6	2	10.9	14.3
Colored.....	3	6.9	0	0	23.5	1	13.8	22.3
Toledo.....	92	16.0	7	76	15.3	10	12.6	13.4
Trenton.....	37	15.6	1	20	18.1	4	15.0	19.1
Utica.....	43	21.9	4	114	14.8	0	16.4	16.4
Washington, D. C. <sup>4</sup> .....	173	18.3	17	95	19.6	19	16.2	19.3
White.....	114	16.7	8	66	16.7	4	14.5	16.7
Colored.....	59	22.6	9	160	27.4	15	20.4	26.1
Waterbury.....	21	10.8	1	33	8.3	3	9.6	11.2
Wilmington, Del. <sup>5</sup> .....	67	32.9	0	0	13.7	1	16.4	16.8
Worcester.....	57	15.0	6	84	13.7	3	12.7	15.7
Yonkers.....	27	9.9	3	77	9.8	4	7.7	11.4
Youngstown.....	40	11.9	4	65	8.7	6	10.6	11.5

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

## DEATHS DURING WEEK ENDED MARCH 5, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended March 5, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Mar. 5, 1932	Corresponding week, 1931
Policies in force.....	73, 926, 205	75, 123, 813
Number of death claims.....	15, 815	16, 589
Death claims per 1,000 policies in force, annual rate.....	11.2	11.5
Death claims per 1,000 policies, first 9 weeks of year, annual rate.....	10.0	11.3

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended March 5, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 5, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 9 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	9,339	13.4	705	4.59	13.8	864	12.3	14.3
Akron.....	48	9.4	8	100	7.7	8	7.8	8.4
Albany.....	30	12.0	2	41	14.5	6	14.4	15.9
Atlanta.....	53	9.8	4	39	17.3	9	14.4	16.4
White.....	28	7.8	2	29	15.3	5	11.3	13.6
Colored.....	25	13.7	2	57	21.3	4	20.4	21.9
Baltimore.....	254	16.2	17	60	17.2	22	14.3	17.7
White.....	186	14.5	11	50	16.2	15	13.3	16.4
Colored.....	68	23.7	6	96	22.0	7	18.8	23.6
Birmingham.....	69	13.0	7	73	14.9	7	12.5	14.9
White.....	35	10.7	2	33	10.9	3	10.5	11.3
Colored.....	34	16.9	5	135	21.3	4	15.8	20.8
Boston.....	222	14.7	20	60	15.2	23	15.1	17.3
Bridgeport.....	31	11.0	2	36	9.9	3	11.7	13.9
Buffalo.....	150	13.3	18	86	15.3	22	13.1	15.5
Cambridge.....	27	12.3	5	104	16.0	3	13.5	14.2
Camden.....	40	17.5	7	123	14.5	1	14.7	18.5
Canton.....	25	12.1	2	50	7.8	2	9.8	11.1
Chicago.....	812	12.0	44	43	11.3	72	11.2	12.4
Cincinnati.....	162	18.3	6	39	17.4	17	16.2	18.6
Cleveland.....	199	11.3	21	68	14.9	26	11.1	12.5
Columbus.....	94	16.4	6	60	16.1	4	14.9	14.8
Dallas.....	78	14.4	6	-----	9.5	8	11.8	12.5
White.....	51	11.4	4	-----	6.7	4	10.9	11.1
Colored.....	27	29.0	2	-----	23.1	4	15.9	18.9
Dayton.....	60	13.2	5	72	14.9	10	11.6	12.7
Denver.....	103	18.3	5	49	15.6	10	17.1	15.9
Des Moines.....	24	8.6	2	34	9.7	1	12.0	12.0
Detroit.....	286	8.7	31	56	10.4	37	8.4	9.9
Duluth.....	16	8.2	1	29	16.9	4	10.0	12.9
El Paso.....	24	11.7	2	-----	15.4	4	14.9	19.0
Erie.....	24	10.5	3	64	9.7	1	10.7	11.7
Fall River.....	36	16.3	3	80	15.4	1	13.2	13.8
Flint.....	32	9.8	7	103	10.8	6	8.8	7.9
Fort Worth.....	36	11.0	6	-----	11.8	1	10.7	11.3
White.....	34	12.3	6	-----	11.5	1	10.3	10.7
Colored.....	2	3.9	0	-----	13.4	0	13.1	14.5
Grand Rapids.....	41	12.3	6	102	10.9	4	8.9	9.7
Houston.....	80	12.9	6	-----	13.1	13	11.1	12.3
White.....	53	11.6	4	-----	11.7	7	10.4	11.3
Colored.....	27	16.5	2	-----	17.0	6	13.1	14.9
Indianapolis.....	120	16.8	19	154	14.5	4	13.9	15.5
White.....	105	16.7	15	138	14.1	4	13.3	15.0
Colored.....	15	17.0	4	274	17.3	0	18.0	18.7
Jersey City.....	61	13.2	6	50	12.3	13	11.1	14.3
Kansas City, Kans.....	39	16.5	4	89	13.6	1	12.3	17.2
White.....	35	13.3	3	80	10.5	0	12.9	15.6
Colored.....	4	8.8	1	128	26.0	1	15.0	23.7
Kansas City, Mo.....	115	14.4	9	102	16.3	12	13.0	15.6
Knoxville.....	21	9.8	1	25	10.5	4	11.5	14.4
White.....	16	8.9	1	28	8.6	4	10.7	13.1
Colored.....	5	14.3	0	0	20.5	0	15.6	21.2
Long Beach.....	22	7.1	1	26	9.6	2	11.0	10.3
Los Angeles.....	329	12.4	21	62	10.0	14	12.5	12.0
Louisville.....	83	14.1	6	55	18.1	5	14.4	17.5
White.....	67	13.4	5	52	16.2	4	12.8	15.7
Colored.....	16	17.5	1	75	22.4	1	23.1	27.3
Lowell.....	28	14.6	4	105	16.6	2	15.2	14.9
Lynn.....	21	10.7	1	28	11.7	1	11.7	12.9
Memphis.....	89	17.7	13	142	18.3	9	17.1	17.2
White.....	44	14.1	4	68	18.3	6	12.8	14.9
Colored.....	45	23.4	9	271	18.4	3	24.1	29.9
Miami.....	23	10.6	1	28	12.9	2	12.6	14.1
White.....	19	11.2	1	39	12.0	1	12.3	13.4
Colored.....	4	8.3	0	0	20.6	1	12.8	16.7
Milwaukee.....	129	11.2	5	38	10.8	12	9.6	11.0
Minneapolis.....	188	15.0	16	104	12.1	14	11.4	12.5

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended March 5, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 5, 1932				Corresponding week, 1931		Death rate for the first 9 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Nashville <sup>1</sup> .....	44	14.7	4	60	22.5	5	14.1	18.7
White.....	30	13.8	4	78	16.7	1	13.4	16.0
Colored.....	14	17.1	0	0	37.8	4	15.8	25.9
New Bedford <sup>1</sup> .....	31	14.4	1	29	10.7	1	13.4	13.7
New Haven.....	26	8.4	0	0	12.5	1	12.5	13.4
New Orleans <sup>1</sup> .....	143	15.8	14	80	13.8	7	15.4	19.8
White.....	85	13.2	5	44	10.5	1	12.9	16.2
Colored.....	58	22.1	9	147	22.1	6	21.7	28.6
New York.....	1,925	13.9	114	51	13.0	170	11.3	14.1
Bronx Boro.....	277	10.5	9	26	9.9	27	8.5	10.3
Brooklyn Boro.....	711	13.9	36	40	11.6	56	10.4	13.1
Manhattan Boro.....	690	20.3	58	83	19.9	67	17.3	21.3
Queens Boro.....	207	8.9	10	42	8.5	14	7.4	9.4
Richmond Boro.....	40	12.5	1	20	19.1	7	13.9	15.0
Newark, N. J.....	115	13.4	5	27	13.3	13	11.3	14.3
Oakland.....	70	12.2	5	63	15.5	7	11.9	12.1
Oklahoma City.....	45	11.4	6	82	12.2	8	10.1	11.7
Omaha.....	67	16.0	4	45	14.4	4	15.6	14.9
Patorson.....	40	15.0	0	0	16.5	3	12.7	16.4
Peoria.....	27	12.7	2	55	15.4	3	12.6	15.0
Philadelphia.....	529	14.0	39	60	15.9	72	12.9	16.8
Pittsburgh.....	229	17.6	17	78	17.1	15	14.9	18.2
Portland, Oreg.....	83	13.9	3	38	13.6	1	12.7	13.0
Providence.....	62	16.7	11	107	16.2	8	15.0	16.3
Richmond <sup>1</sup> .....	63	17.8	3	45	16.1	8	15.6	19.3
White.....	37	14.6	1	22	11.9	4	13.1	15.2
Colored.....	26	25.7	2	92	26.6	4	21.7	26.2
Rochester.....	75	11.7	7	67	13.2	7	11.9	14.2
St. Louis.....	227	14.3	7	25	18.4	12	14.1	19.1
St. Paul.....	80	15.0	0	0	13.6	1	11.1	11.1
Salt Lake City <sup>1</sup> .....	22	7.9	4	63	12.8	2	12.0	12.2
San Antonio.....	62	17.4	16	15	15.9	8	15.0	15.5
San Diego.....	55	17.6	1	22	17.0	4	17.2	16.4
San Francisco.....	169	13.3	6	42	19.0	7	14.4	15.0
Schenectady.....	16	8.7	2	58	14.6	3	11.2	12.5
Seattle.....	101	14.0	7	70	15.4	7	12.5	12.6
Somerville.....	14	6.9	1	40	8.4	2	9.6	12.3
South Bend.....	13	6.1	1	29	15.0	2	8.4	9.4
Spokane.....	32	14.3	5	133	12.6	2	12.6	12.9
Springfield, Mass.....	30	10.2	4	67	16.1	6	11.8	14.4
Syracuse.....	51	12.3	4	52	12.0	2	11.8	13.4
Tacoma.....	26	12.5	0	0	20.3	0	12.5	14.9
Tampa <sup>1</sup> .....	38	18.4	4	114	13.4	4	12.3	15.7
White.....	33	20.3	3	105	13.2	2	11.9	14.2
Colored.....	5	11.5	1	158	14.1	2	13.5	21.4
Toledo.....	83	14.4	7	76	14.7	7	12.8	13.5
Trenton.....	30	12.6	1	20	25.7	6	14.7	19.8
Utica.....	27	11.2	2	57	20.9	2	15.8	16.9
Washington, D. C. <sup>1</sup> .....	164	16.5	17	95	17.1	19	16.5	19.1
White.....	128	18.7	10	82	14.6	11	15.0	16.6
Colored.....	56	21.4	7	125	23.2	8	20.5	25.6
Waterbury.....	23	11.8	4	132	11.4	1	9.9	11.2
Wilmington, Del. <sup>1</sup> .....	52	25.5	3	68	18.6	2	17.4	17.0
Worcester.....	52	13.7	8	112	16.1	5	12.8	15.7
Yonkers.....	16	5.9	1	26	9.4	0	7.5	11.1
Youngstown.....	33	9.8	3	49	14.5	7	10.5	11.9

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 16; Memphis, 38; Miami, 25; Nashville, 25; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1930 to 1930, no estimate made.



# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended March 12, 1932, and March 14, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 12, 1932, and March 14, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931
<b>New England States:</b>								
Maine.....	2	5	17	63	445	49	0	1
New Hampshire.....	2	1	1	1	13	59	0	0
Vermont.....	2	2	1	1	32	32	0	0
Massachusetts.....	29	46	43	18	481	419	0	0
Rhode Island.....	3	3	1	1	451	12	2	0
Connecticut.....	1	15	28	24	236	766	0	2
<b>Middle Atlantic States:</b>								
New York.....	124	126	324	142	2,643	1,835	8	21
New Jersey.....	39	76	266	70	188	633	1	3
Pennsylvania.....	131	93	1	1	1,925	3,633	5	22
<b>East North Central States:</b>								
Ohio.....	64	55	492	872	1,879	680	2	11
Indiana.....	64	28	200	53	45	767	10	15
Illinois.....	86	63	190	125	252	1,711	10	1
Michigan.....	33	32	146	223	602	543	2	13
Wisconsin.....	13	19	874	113	418	449	3	3
<b>West North Central States:</b>								
Minnesota.....	9	16	1	1	14	82	0	4
Iowa.....	14	7	1	1	1	16	3	1
Missouri.....	32	38	10	47	83	331	0	9
North Dakota.....	1	7	1	1	25	17	4	1
South Dakota.....	4	8	10	1	15	30	2	1
Nebraska.....	11	7	4	1	38	2	0	1
Kansas.....	15	12	9	77	126	40	0	1
<b>South Atlantic States:</b>								
Delaware.....	1	3	3	6	1	97	0	0
Maryland.....	26	13	219	140	80	899	2	0
District of Columbia.....	9	7	14	2	1	153	3	4
Virginia.....	1	1	1	1	1	1	1	1
West Virginia.....	18	8	375	162	626	110	2	1
North Carolina.....	29	24	76	86	439	501	3	6
South Carolina.....	8	16	993	2,320	95	127	0	4
Georgia.....	7	6	185	1,072	22	114	0	4
Florida.....	1	8	2	87	1	134	0	0
<b>East South Central States:</b>								
Kentucky.....	11	1	384	1	76	403	1	9
Tennessee.....	19	7	1,463	393	182	160	3	3
Alabama.....	24	31	87	627	5	340	0	0
Mississippi.....	10	13	1	1	1	1	0	2
<b>West South Central States:</b>								
Arkansas.....	4	6	144	242	1	24	1	4
Louisiana.....	31	27	12	39	18	2	0	4
Oklahoma.....	20	12	608	183	24	25	0	1
Texas.....	59	74	410	233	26	276	0	0
<b>Mountain States:</b>								
Montana.....	2	2	182	1	81	1	1	0
Idaho.....	1	1	2	1	1	3	0	0
Wyoming.....	2	1	1	3	2	2	1	0
Colorado.....	7	9	1	1	145	659	0	0
New Mexico.....	16	5	3	29	121	53	1	2
Arizona.....	1	1	117	19	2	120	2	5
Utah.....	1	1	1	1	1	1	0	3
<b>Pacific States:</b>								
Washington.....	7	6	1	1	548	51	1	3
Oregon.....	1	5	233	290	160	80	0	0
California.....	49	58	170	505	517	1,266	4	7

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, 8 cases: 3 cases in Alabama and 5 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 12, 1932, and March 14, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931	Week ended Mar. 12, 1932	Week ended Mar. 14, 1931
<b>New England States:</b>								
Maine.....	0	0	35	47	0	0	0	2
New Hampshire.....	0	1	32	16	0	0	0	0
Vermont.....	0	0	22	9	6	0	1	0
Massachusetts.....	1	2	489	357	0	0	2	3
Rhode Island.....	0	0	53	67	0	0	0	0
Connecticut.....	0	0	109	59	4	0	1	1
<b>Middle Atlantic States:</b>								
New York.....	1	0	1,821	1,237	2	11	7	13
New Jersey.....	2	2	334	317	0	0	1	0
Pennsylvania.....	0	0	747	562	0	0	6	9
<b>East North Central States:</b>								
Ohio.....	0	0	487	627	27	42	2	5
Indiana.....	1	0	133	289	13	104	4	6
Illinois.....	0	4	396	352	24	26	3	0
Michigan.....	1	1	460	402	8	22	7	5
Wisconsin.....	1	3	102	162	0	4	11	2
<b>West North Central States:</b>								
Minnesota.....	1	0	110	114	2	7	1	0
Iowa.....	0	1	63	132	20	73	3	1
Missouri.....	0	0	55	301	7	45	4	5
North Dakota.....	0	0	25	39	2	11	0	0
South Dakota.....	0	0	13	14	0	32	1	2
Nebraska.....	0	0	38	62	12	33	3	0
Kansas.....	0	3	55	71	2	116	3	1
<b>South Atlantic States:</b>								
Delaware.....	0	0	15	25	0	0	1	1
Maryland <sup>1</sup> .....	0	0	132	85	0	0	4	1
District of Columbia.....	0	0	24	33	0	0	3	0
Virginia.....					1			
West Virginia.....	1	0	29	40	4	10	12	1
North Carolina.....	0	0	54	51	1	1	7	1
South Carolina.....	1	0	7	4	0	3	2	6
Georgia.....	0	0	8	82	0	0	10	7
Florida.....	0	0	2	7	0	1	5	3
<b>East South Central States:</b>								
Kentucky.....	0	0	76	94	0	15	9	1
Tennessee.....	0	0	31	29	7	0	9	0
Alabama <sup>1</sup> .....	0	0	15	24	8	33	13	3
Mississippi.....	0	0	6	16	17	15	5	2
<b>West South Central States:</b>								
Arkansas.....	0	0	2	31	27	18	0	1
Louisiana.....	0	0	16	25	2	26	13	6
Oklahoma <sup>1</sup> .....	0	0	30	54	11	89	4	2
Texas <sup>1</sup> .....	0	0	38	38	46	56	4	1
<b>Mountain States:</b>								
Montana.....	0	0	17	32	0	2	4	0
Idaho.....	0	0	2	9	0	0	0	0
Wyoming.....	0	0	2	28	1	5	0	0
Colorado.....	0	0	33	54	2	1	0	2
New Mexico.....	0	0	10	9	0	3	1	0
Arizona.....	1	0	3	8	1	0	0	0
Utah <sup>1</sup> .....	0	0	119	19	0	4	0	0
<b>Pacific States:</b>								
Washington.....	0	0	26	59	10	37	0	9
Oregon.....	0	0	26	19	11	18	3	9
California.....	6	2	139	139	13	46	7	4

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 8 cases; 3 cases in Alabama and 5 cases in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pella- gra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>January, 1932</i>										
Arkansas.....		68	78	12	12	11	1	49	64	22
<i>February, 1932</i>										
Arizona.....		18	260	1	4		1	22	1	0
Connecticut.....	6	26	62		971		2	413	26	3
District of Columbia.....	2	61	10		11	1	0	95	0	2
Florida.....	4	60	8	21	22	2	2	25	1	28
Georgia.....	6	43	524	59	24	21	2	59	0	44
Iowa.....	2	50	40		24		3	223	141	4
Nebraska.....	13	32	419		147		0	138	38	2
South Carolina.....		123	2, 639	501	204	143	1	31	1	23
Tennessee.....	13	115	964	13	213	16	1	173	67	34
Wyoming.....			208		5		1	27	0	0

*January, 1932*

Arkansas:	Cases
Chicken pox.....	76
Hookworm disease.....	2
Mumps.....	33
Trachoma.....	2
Tularaemia.....	2
Whooping cough.....	46

*February, 1932*

Chicken pox:	
Arizona.....	163
Connecticut.....	523
District of Columbia.....	150
Florida.....	12
Georgia.....	99
Iowa.....	196
Nebraska.....	150
South Carolina.....	175
Tennessee.....	163
Wyoming.....	27
Conjunctivitis:	
Connecticut.....	1
Wyoming.....	14
Dengue:	
South Carolina.....	7
Diarrhea:	
South Carolina.....	235
Dysentery:	
Connecticut (bacillary).....	4
Florida.....	1
Georgia.....	11
Tennessee.....	5
German measles:	
Connecticut.....	26
Iowa.....	22
Tennessee.....	9
Hookworm disease:	
South Carolina.....	52
Lethargic encephalitis:	
Connecticut.....	4
South Carolina.....	2

Mumps:	Cases
Arizona.....	11
Connecticut.....	333
Florida.....	15
Georgia.....	78
Iowa.....	75
Nebraska.....	132
South Carolina.....	277
Tennessee.....	127
Wyoming.....	58
Ophthalmia neonatorum:	
Connecticut.....	1
South Carolina.....	10
Tennessee.....	2
Paratyphoid fever:	
Connecticut.....	5
South Carolina.....	5
Tennessee.....	1
Puerperal septicemia:	
Tennessee.....	1
Rabies in animals:	
Connecticut.....	14
South Carolina.....	15
Septic sore throat:	
Connecticut.....	30
Georgia.....	23
Iowa.....	2
Nebraska.....	1
Tennessee.....	12
Tetanus:	
Connecticut.....	1
Tennessee.....	1
Trachoma:	
Arizona.....	12
Tennessee.....	2
Trichinosis:	
Connecticut.....	2
Iowa.....	1
Tularaemia:	
Georgia.....	4
South Carolina.....	3
Tennessee.....	4

Typhus fever:	Cases	Whooping cough:	Cases
Florida.....	1	Arizona.....	46
Georgia.....	10	Connecticut.....	482
South Carolina.....	2	District of Columbia.....	83
Tennessee.....	1	Florida.....	35
Undulant fever:		Georgia.....	85
Connecticut.....	3	Iowa.....	97
Georgia.....	3	Nebraska.....	94
Iowa.....	4	South Carolina.....	142
Tennessee.....	1	Tennessee.....	304
Vincent's angina:			
Iowa.....	2		
South Carolina.....	1		
Tennessee.....	1		

### ADMISSIONS TO HOSPITALS FOR THE INSANE, MAY, 1930

Reports for the month of May, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 113 hospitals, located in 38 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 182,001 patients on May 31, 1930, 97,017 males and 84,984 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of May, 1930, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	12	2	14
2. Senile psychoses.....	137	128	265
3. Psychoses with cerebral arteriosclerosis.....	191	120	311
4. General paralysis.....	230	58	288
5. Psychoses with cerebral syphilis.....	28	7	35
6. Psychoses with Huntington's chorea.....	4	2	6
7. Psychoses with brain tumor.....	0	0	0
8. Psychoses with other brain or nervous disease.....	40	23	63
9. Alcoholic psychoses.....	137	17	154
10. Psychoses due to drugs and other exogenous toxins.....	8	13	21
11. Psychoses with pellagra.....	12	38	50
12. Psychoses with other somatic diseases.....	34	46	80
13. Manic-depressive psychoses.....	219	256	475
14. Involution melancholia.....	23	46	69
15. Dementia præcox (schizophrenia).....	420	310	730
16. Paranoia and paranoid conditions.....	31	45	76
17. Epileptic psychoses.....	46	29	75
18. Psychoneuroses and neuroses.....	17	45	63
19. Psychoses with psychopathic personality.....	23	11	34
20. Psychoses with mental deficiency.....	56	56	112
21. Undiagnosed psychoses.....	121	111	232
22. Without psychosis.....	172	63	235
Total.....	1,061	1,427	3,388

During the month of May, 1930, there were 3,388 new admissions to the hospitals, 57.9 per cent of these new admissions being males and 42.1 per cent females. Four hundred and sixty-seven of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,921 new admissions for whom provisional diagnoses were made. Of these 2,921 patients, cases of dementia præcox constituted 25 per cent; manic-depressive psychoses, 16.3 per

cent; psychoses with cerebral arteriosclerosis, 10.6 per cent; general paralysis, 9.9 per cent; and senile psychoses, 9.1 per cent. These five classes accounted for 2,069 of the new admissions, or 70.8 per cent of those for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on May 31, 1930:

	Male	Female	Total
Patients on books May 31, 1930			
In hospitals.....	87, 170	77, 433	164, 603
On parole or otherwise absent, but still on books.....	9, 847	7, 551	17, 398
Total.....	97, 017	84, 984	182, 001

Of the 182,001 patients, 9,847 males and 7,551 females were on parole or otherwise absent but still on the books at the end of the month, 10.1 per cent of the males, 8.9 per cent of the females, and 9.6 per cent of the total number of patients.

#### INFLUENZA, FEBRUARY 21 TO MARCH 12, 1932

In the table following are presented the influenza case rates, by weeks, per 100,000 population, annual basis, in geographic groups of States, as indicated by weekly reports, for the three weeks ended March 12, 1932, and similar rates for the seven weeks from February 22 to April 11, 1931. The rates are calculated, in groups and as a whole, on the reported cases and estimated populations of 35 States, the District of Columbia, and New York City. The States included are the same as shown for a similar table on pages 571 and 572 of the Public Health Reports of March 4, 1932. Complete figures are not available for the States which are omitted from the table.

#### *Influenza case rates per 100,000 population*

	1932			1931						
	Feb. 27	Mar. 5	Mar. 12	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
35 States.....	484	598	455	574	422	443	253	306	239	187
New England.....	43	36	68	200	124	82	60	41	24	15
Middle Atlantic.....	194	334	271	91	46	52	46	22	25	20
East North Central.....	357	303	386	348	154	282	63	97	64	49
West North Central.....	143	96	17	244	70	64	53	51	29	20
South Atlantic.....	539	680	718	2, 313	1, 742	1, 497	819	1, 098	888	734
East South Central.....	559	1, 255	1, 287	507	495	670	456	677	418	323
West South Central.....	740	805	545	230	246	298	249	248	232	215
Mountain.....	4, 784	6, 677	762	25	73	128	58	180	451	33
Pacific.....	421	356	804	484	584	617	485	348	203	133

<sup>1</sup> An estimate of 2,000 cases for 1 county in New Mexico is omitted because if included the rates for New Mexico can not be fairly compared with those for other States.

# GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended March 5, 1932, and March 7, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	1, 112	1, 096	-----
98 cities.....	407	460	778
Measles:			
45 States.....	12, 508	15, 272	-----
98 cities.....	4, 545	4, 937	-----
Meningococcus meningitis:			
46 States.....	78	172	-----
98 cities.....	85	79	-----
Pollomyelitis:			
46 States.....	15	34	-----
Scarlet fever:			
46 States.....	6, 353	6, 114	-----
98 cities.....	3, 092	2, 215	1, 612
Smallpox:			
46 States.....	412	962	-----
98 cities.....	29	81	66
Typhoid fever:			
46 States.....	165	129	-----
98 cities.....	40	26	31
<i>Deaths reported</i>			
Influenza and pneumonia:			
91 cities.....	1, 403	1, 458	-----
Smallpox:			
91 cities.....	0	0	-----

## City reports for week ended March 5, 1933

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	2	1	2	-----	0	252	0	2
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	0
Manchester.....	0	0	0	-----	1	0	0	1
Nashua.....	0	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	1	0	0	0
Burlington.....	2	0	0	-----	0	30	1	1
Massachusetts:								
Boston.....	45	26	13	4	1	37	38	36
Fall River.....	6	3	1	1	1	57	4	4
Springfield.....	27	3	0	-----	0	11	25	1
Worcester.....	8	2	1	-----	1	0	54	11
Rhode Island:								
Pawtucket.....	0	2	0	-----	0	0	0	0
Providence.....	8	7	3	-----	2	367	11	7
Connecticut:								
Bridgeport.....	6	5	0	-----	1	0	0	7
Hartford.....	12	5	0	1	0	1	11	5
New Haven.....	18	0	0	2	0	1	11	3
MIDDLE ATLANTIC								
New York:								
Buffalo.....	42	12	3	-----	2	6	3	25
New York.....	216	192	100	514	66	95	163	338
Rochester.....	4	4	1	-----	0	450	15	2
Syracuse.....	18	2	1	-----	0	388	8	6
New Jersey:								
Camden.....	13	5	10	-----	0	3	3	10
Newark.....	43	14	4	71	0	5	107	24
Trenton.....	8	3	0	20	2	1	7	5
Pennsylvania:								
Philadelphia.....	137	63	13	11	5	8	99	44
Pittsburgh.....	39	18	11	6	19	178	57	44
Reading.....	52	2	0	-----	0	5	5	5
Scranton.....	7	-----	2	-----	-----	6	0	-----
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	8	7	4	2	5	0	0	24
Cleveland.....	116	27	9	116	3	785	180	28
Columbus.....	6	2	6	1	1	0	4	15
Toledo.....	22	4	1	11	10	28	2	7
Indiana:								
Fort Wayne.....	1	3	15	-----	1	1	0	0
Indianapolis.....	58	5	4	-----	7	0	105	19
South Bend.....	0	1	0	-----	0	0	0	0
Terre Haute.....	1	0	0	-----	2	0	0	5
Illinois:								
Chicago.....	94	90	37	28	21	208	8	89
Peoria.....	6	-----	2	-----	2	0	0	4
Springfield.....	3	0	1	-----	0	0	0	5
Michigan:								
Detroit.....	100	44	20	75	19	75	37	44
Flint.....	14	2	2	104	1	84	82	9
Grand Rapids.....	2	1	0	12	5	94	21	7

## City reports for week ended March 5, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha.....	3	1	0	1	0	0	0	2
Madison.....	8	0	2			0	0	
Milwaukee.....	88	13	2	9	4	286	36	16
Racine.....	38	1	1		0	9	73	0
Superior.....	2	0	0		0	1	46	2
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	4	0	0		0	0	0	2
Minneapolis.....	19	13	6		6	0	31	14
St. Paul.....	2	6	0	3	3	1	12	9
Iowa:								
Davenport.....	0	1	1			1	1	
Des Moines.....	0	1	5			0	0	
Sioux City.....	2	0	0			0	8	
Waterloo.....	7	0	0			0	0	
Missouri:								
Kansas City.....	24	5	8		0	2	2	14
St. Joseph.....	5	2	2		0	0	0	6
St. Louis.....	39	36	7			1	2	7
North Dakota:								
Fargo.....	2	0	0		0	23	1	1
South Dakota:								
Aberdeen.....	1	0	0			72	0	
Nebraska:								
Omaha.....	3	5	1		0	0	1	22
Kansas:								
Topeka.....	13	2	0	1	2	1	3	8
Wichita.....	14	1	2		0	99	1	5
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	2	0		0	0	2	1
Maryland:								
Baltimore.....	123	21	14	135	4	4	115	26
Cumberland.....	0	0	0		0	17	0	1
Frederick.....	0	0	0		0	2	0	1
District of Columbia:								
Washington.....	55	13	12	7	3	2	0	18
Virginia:								
Lynchburg.....	2	0	1		0	0	1	1
Norfolk.....	6	1	1		0	0	0	0
Richmond.....	3	3	3		2	0	0	3
Roanoke.....	0	1	1		0	2	0	0
West Virginia:								
Charleston.....	0	0	1	7	0	125	0	6
Huntington.....	0		3			0	0	
Wheeling.....	1	1	0	6	2	0	1	8
North Carolina:								
Raleigh.....	0	1	0		0	54	0	3
Wilmington.....	1	0	0		0	1	0	1
Winston-Salem.....	15	1	0	1	0	6	7	7
South Carolina:								
Charleston.....	4	0	1	66	2	0	0	5
Columbia.....	0	0	0		1	0	0	8
Greenville.....	2	0	0		0	0	0	
Georgia:								
Atlanta.....	3	3	1	7	0	0	1	5
Brunswick.....	7	0	0		0	0	0	1
Savannah.....	2	1	2	35	0	3	0	5
Florida:								
Miami.....	0	2	1	1	0	1	0	4
Tampa.....	0	3	4	6	3	0	0	0



## City reports for week ended March 5, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	-----	0	0	0	3
Lexington.....	1	-----	0	-----	0	2	50	0
Tennessee:								
Memphis.....	4	3	2	-----	2	0	0	7
Nashville.....	2	1	1	-----	0	2	0	8
Alabama:								
Birmingham.....	3	1	1	4	0	1	2	8
Mobile.....	0	0	1	1	0	0	0	1
Montgomery.....	8	1	1	-----	-----	0	9	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	-----	-----	0	0	-----
Little Rock.....	9	0	0	-----	0	0	3	4
Louisiana:								
New Orleans.....	2	13	18	1	1	0	0	10
Shreveport.....	3	0	0	-----	0	54	7	8
Texas:								
Dallas.....	6	6	4	21	9	23	0	13
Forth Worth.....	12	4	3	-----	2	1	0	2
Galveston.....	0	0	0	-----	0	0	0	2
Houston.....	2	5	8	-----	1	1	0	13
San Antonio.....	1	3	1	-----	10	0	0	4
MOUNTAIN								
Montana:								
Billings.....	1	0	0	-----	0	4	0	0
Great Falls.....	9	0	0	-----	1	0	0	1
Helena.....	0	1	0	-----	0	1	0	0
Missoula.....	0	0	0	80	0	0	0	1
Idaho:								
Boise.....	0	0	0	-----	1	0	0	2
Colorado:								
Denver.....	10	7	1	-----	2	15	27	15
Pueblo.....	43	0	0	-----	0	0	0	8
New Mexico:								
Albuquerque.....	3	0	0	-----	0	52	1	2
Arizona:								
Phoenix.....	0	0	0	-----	0	0	0	1
Utah:								
Salt Lake City.....	15	1	0	-----	0	2	0	1
Nevada:								
Reno.....	0	0	0	-----	0	1	0	0
PACIFIC								
Washington:								
Seattle.....	22	4	2	-----	-----	436	7	-----
Spokane.....	5	2	1	-----	-----	2	0	-----
Tacoma.....	10	0	1	-----	0	9	0	1
Oregon:								
Portland.....	13	6	1	17	1	47	6	14
Salem.....	2	0	0	12	-----	0	1	-----
California:								
Los Angeles.....	276	30	21	96	5	11	13	17
Sacramento.....	24	1	2	2	0	152	3	14
San Francisco.....	79	13	3	4	0	80	9	12

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
<b>NEW ENGLAND</b>											
Maine:											
Portland	4	2	0	0	0	0	0	0	0	7	23
New Hampshire:											
Concord	1	2	0	0	0	0	0	0	0	0	11
Manchester	1	12	0	0	0	0	0	0	0	0	22
Nashua	1	3	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	4
Burlington	1	1	0	1	0	1	0	0	0	0	11
Massachusetts:											
Boston	86	167	0	0	0	11	1	2	0	48	222
Fall River	4	11	0	0	0	2	0	0	0	11	26
Springfield	10	0	0	4	0	1	0	0	0	2	33
Worcester	11	31	0	0	0	1	0	0	0	23	52
Rhode Island:											
Pawtucket	2	0	0	0	0	0	0	0	0	0	32
Providence	15	17	0	0	0	2	0	0	0	5	82
Connecticut:											
Bridgeport	12	8	0	0	0	1	0	0	0	0	31
Hartford	8	16	0	0	0	2	0	0	0	30	40
New Haven	6	24	0	0	0	1	0	0	0	8	26
<b>MIDDLE ATLANTIC</b>											
New York:											
Buffalo	29	159	0	0	0	5	0	0	0	19	146
New York	316	1,052	0	0	0	95	7	6	2	172	1,925
Rochester	9	71	0	0	0	1	1	0	0	3	70
Syracuse	14	22	0	0	0	0	0	0	0	109	51
New Jersey:											
Camden	6	43	0	0	0	2	0	0	0	4	40
Newark	41	37	0	0	0	3	0	0	0	34	128
Trenton	3	15	0	0	0	2	1	0	0	5	30
Pennsylvania:											
Philadelphia	95	276	0	0	0	34	1	1	0	295	529
Pittsburgh	31	68	0	0	0	10	0	3	0	58	229
Reading	6	13	0	0	0	0	0	0	0	20	27
Scranton		39		0	0	0		0	0	6	-----
<b>EAST NORTH CENTRAL</b>											
Ohio:											
Cincinnati	29	44	1	0	0	12	0	1	0	6	162
Cleveland	60	78	0	0	0	11	0	0	0	179	199
Columbus	11	5	1	10	0	2	0	0	0	38	94
Toledo	13	8	1	0	0	4	0	0	0	84	83
Indiana:											
Fort Wayne	4	6	0	0	0	0	1	1	0	2	19
Indianapolis	16	10	8	1	0	5	0	0	0	87	-----
South Bend	4	1	0	0	0	2	0	0	0	0	13
Terre Haute	2	0	1	0	0	1	0	0	0	1	19
Illinois:											
Chicago	151	195	2	1	0	47	1	1	0	152	812
Peoria		1		0	0	1		0	0	1	27
Springfield	3	3	1	0	0	0	1	0	0	7	26
Michigan:											

## City reports for week ended March 5, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	8	2	0	0	0	0	0	0	0	0	16
Minneapolis.....	42	63	0	0	0	3	0	0	0	15	138
St. Paul.....	28	24	1	0	0	5	1	0	0	18	83
Iowa:											
Davenport.....	0	13	1	0	—	—	0	0	—	0	—
Des Moines.....	9	10	2	0	—	—	0	0	—	0	24
Sioux City.....	1	0	0	0	—	—	0	0	—	5	—
Waterloo.....	1	1	1	2	—	—	0	0	—	6	—
Missouri:											
Kansas City.....	25	7	1	0	0	4	0	0	0	24	115
St. Joseph.....	3	3	0	0	0	0	0	0	0	1	18
St. Louis.....	42	18	3	0	0	14	1	0	0	85	237
North Dakota:											
Fargo.....	1	0	0	0	0	0	0	0	0	0	5
South Dakota:											
Aberdeen.....	0	3	0	1	—	—	0	0	—	0	—
Nebraska:											
Omaha.....	6	4	4	1	0	1	0	0	0	5	67
Kansas:											
Topeka.....	3	0	0	0	0	0	0	0	0	25	22
Wichita.....	4	0	2	0	0	2	0	0	0	0	34
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	13	0	0	0	2	0	0	0	18	33
Maryland:											
Baltimore.....	39	69	0	0	0	13	0	5	0	145	254
Cumberland.....	1	1	0	0	0	0	0	0	0	2	5
Frederick.....	1	2	0	0	0	0	0	0	0	1	3
District of Colum- bia:											
Washington.....	27	51	1	0	0	12	1	2	0	26	184
Virginia:											
Lynchburg.....	1	2	0	0	0	0	0	0	0	2	10
Norfolk.....	2	7	0	0	0	0	0	0	0	3	—
Richmond.....	4	7	0	0	0	6	0	0	0	1	56
Roanoke.....	1	2	0	0	0	1	0	0	0	0	14
West Virginia:											
Charleston.....	0	0	0	3	0	2	0	0	0	3	30
Huntington.....	—	0	—	0	—	—	—	0	—	0	—
Wheeling.....	3	0	0	0	0	0	0	0	0	7	30
North Carolina:											
Raleigh.....	1	0	1	0	0	0	0	0	0	3	14
Wilmington.....	0	0	0	0	0	1	0	0	0	6	5
Winston-Salem.....	2	8	1	0	0	2	0	0	0	34	22
South Carolina:											
Charleston.....	0	1	0	0	0	0	0	0	0	0	32
Columbia.....	0	0	0	0	0	2	0	0	0	0	27
Greenville.....	0	2	0	0	0	0	0	0	0	1	—
Georgia:											
Atlanta.....	5	3	1	0	0	1	0	0	0	1	53
Brunswick.....	0	0	0	0	0	0	0	0	0	0	1
Savannah.....	1	0	1	0	0	2	1	2	0	7	34
Florida:											
Miami.....	1	1	0	0	0	0	1	0	0	6	23
Tampa.....	2	0	0	0	0	0	2	1	0	0	31
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	3	0	0	0	0	2	0	0	0	0	18
Lexington.....	—	1	—	0	0	0	—	0	0	13	14
Tennessee:											
Memphis.....	12	7	1	0	0	5	2	2	0	31	89
Nashville.....	3	0	0	0	0	1	1	0	0	10	44
Alabama:											
Birmingham.....	4	2	1	0	0	10	0	0	0	5	69
Mobile.....	0	4	1	3	0	1	0	1	0	0	34
Montgomery.....	0	2	0	0	—	—	0	0	—	0	—

## City reports for week ended March 5, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0			0	0		0	
Little Rock.....	1	1	0	0	0	7	0	0	0	1	11
Louisiana:											
New Orleans.....	10	8	1	0	0	13	2	5	1	6	143
Shreveport.....	1	1	1	0	0	0	1	0	1	8	28
Texas:											
Dallas.....	6	6	2	1	0	8	0	0	0	9	78
Fort Worth.....	3	8	3	8	0	1	0	1	0	0	36
Galveston.....	0	0	0	0	0	4	0	0	0	0	20
Houston.....	3	4	4	0	0	6	0	0	0	0	80
San Antonio.....	2	0	1	1	0	10	0	0	0	0	82
MOUNTAIN											
Montana:											
Billings.....	2	0	0	0	0	0	0	0	0	0	11
Great Falls.....	3	0	1	0	0	0	0	0	0	0	8
Helena.....	1	0	0	0	0	0	0	0	0	0	5
Missoula.....	1	3	0	0	0	0	0	0	0	0	7
Idaho:											
Boise.....	0	0	0	0	0	2	0	0	0	0	11
Colorado:											
Denver.....	16	9	0	0	0	7	0	0	0	12	94
Pueblo.....	1	1	0	0	0	0	0	0	0	3	18
New Mexico:											
Albuquerque.....	1	1	0	0	0	3	0	0	0	0	8
Arizona:											
Phoenix.....	1	0	0	0	0	3	0	0	0	0	
Utah:											
Salt Lake City.....	6	5	0	0	0	0	0	0	0	0	22
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	11	6	3	1	0		1	0		5	
Spokane.....	6	2	8	0	0		0	0		2	
Tacoma.....	2	3	3	0	0	1	0	0	0	3	26
Oregon:											
Portland.....	6	5	13	9	0	2	0	0	0	4	83
Salem.....	1	0	1	0	0	0		0	0	3	
California:											
Los Angeles.....	43	55	3	0	0	30	2	0	0	21	329
Sacramento.....	3	2	1	0	0	3	0	0	0	2	46
San Francisco.....	28	15	1	1	0	14	0	0	0	16	169

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Deaths
<b>MIDDLE ATLANTIC</b>								
New York:								
Buffalo.....	0	1	0	0	0	0	0	0
New York.....	6	2	3	1	0	0	1	0
Rochester.....	2	0	0	0	0	0	0	0
New Jersey:								
Trenton.....	1	1	0	0	0	0	0	0
Pennsylvania:								
Philadelphia.....	3	2	0	0	0	0	0	0
Pittsburgh.....	1	0	0	0	0	0	0	0

## City reports for week ended March 5, 1933—Continued

Division, State, and city	Meningo- cocous meningitis		Lethargic en- cephalitis		Pellagra		Polio-myelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	1	0	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	7	5	0	0	0	0	0	0	0
Illinois:									
Chicago.....	3	1	0	0	0	0	0	0	0
Michigan:									
Detroit 1.....	0	0	1	1	0	0	0	0	0
Flint.....	0	0	0	1	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Iowa:									
Sioux City.....	1	1	0	0	0	0	0	0	0
Waterloo.....	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	1	0	0	0	0	0	0	0	0
St. Louis.....	1	1	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	1	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	2	1	1	1	0	1	0	1	0
Virginia:									
Norfolk.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	1	0	0	0	0	1	0	0	0
Winston-Salem.....	1	0	0	0	1	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	0	0	0	0
Georgia:									
Savannah 2.....	0	0	0	0	4	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Covington.....	0	0	0	1	0	0	0	0	0
Tennessee:									
Memphis.....	0	1	0	0	0	1	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	1	0	0	0	0
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
<b>MOUNTAIN</b>									
Montana:									
Great Falls.....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	1	2	0	0	0	0	1	3	1
San Francisco.....	0	0	1	1	0	0	0	0	0

1 Rabies in man, 1 death at Detroit, Mich.

2 Typhus fever, 5 cases at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended March 5, 1932, compared with those for a like period ended March 7, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, January 31 to March 5, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>*

## DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931
98 cities.....	78	78	78	67	72	68	64	70	62	73
New England.....	48	84	65	76	108	70	65	89	48	106
Middle Atlantic.....	75	53	75	53	65	64	72	56	63	61
East North Central.....	79	96	74	85	57	66	45	78	66	75
West North Central.....	81	99	89	55	85	59	66	55	49	71
South Atlantic.....	84	75	59	59	88	47	69	77	78	93
East South Central.....	87	53	87	53	75	59	46	59	35	29
West South Central.....	152	156	108	118	158	186	119	132	102	118
Mountain.....	60	78	103	78	52	35	9	87	9	61
Pacific.....	72	69	63	49	47	59	67	57	57	63

## MEASLES CASE RATES

98 cities.....	445	473	438	521	533	668	571	703	698	769
New England.....	2,322	502	2,008	534	1,589	541	1,510	635	1,740	909
Middle Atlantic.....	226	253	253	398	384	652	466	645	504	874
East North Central.....	321	151	364	183	577	254	590	300	919	369
West North Central.....	172	1,489	182	1,314	197	1,087	226	874	241	643
South Atlantic.....	198	1,296	245	1,820	359	2,206	282	2,805	424	2,241
East South Central.....	0	1,034	17	904	12	1,134	0	1,051	17	1,045
West South Central.....	198	3	320	17	251	24	234	24	267	68
Mountain.....	284	1,123	198	687	138	1,566	250	1,210	198	1,331
Pacific.....	1,138	112	931	169	1,125	243	1,296	223	1,313	347

## SCARLET FEVER CASE RATES

98 cities.....	348	320	385	348	417	346	441	373	475	348
New England.....	705	534	630	663	738	589	673	606	666	527
Middle Atlantic.....	445	304	546	322	631	342	694	381	777	359
East North Central.....	325	331	385	375	356	353	372	364	382	346
West North Central.....	284	480	235	474	241	497	248	509	281	494
South Atlantic.....	245	305	239	320	231	305	284	364	312	354
East South Central.....	133	423	127	382	75	534	121	558	87	405
West South Central.....	106	88	49	105	86	139	56	125	66	71
Mountain.....	250	261	172	400	267	296	172	305	155	305
Pacific.....	116	145	109	123	128	94	124	145	158	122

See footnotes at end of table.

Summary of weekly reports from cities, January 31 to March 5, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Feb. 6, 1932	Feb. 7, 1931	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931
98 cities.....	2	23	4	18	4	20	4	20	4	13
New England.....	2	0	2	0	5	0	5	0	10	0
Middle Atlantic.....	0	2	0	0	0	3	1	0	0	0
East North Central.....	0	12	1	10	1	13	1	11	7	15
West North Central.....	9	151	11	84	13	128	19	128	6	57
South Atlantic.....	2	0	0	0	0	2	0	0	6	0
East South Central.....	0	29	6	12	29	18	17	23	17	23
West South Central.....	13	81	20	132	7	51	7	64	7	47
Mountain.....	0	44	17	0	0	44	0	9	0	17
Pacific.....	4	24	17	29	21	22	13	39	4	12

## TYPHOID FEVER CASE RATES

98 cities.....	5	14	6	3	3	4	5	7	6	4
New England.....	2	2	2	2	0	0	2	5	5	5
Middle Atlantic.....	4	1	3	2	4	3	4	6	4	3
East North Central.....	4	2	2	1	3	0	4	3	6	1
West North Central.....	2	2	9	2	0	4	2	11	0	11
South Atlantic.....	4	18	16	0	10	10	16	22	20	12
East South Central.....	29	6	58	29	0	0	12	6	17	18
West South Central.....	23	24	3	14	3	7	7	14	16	0
Mountain.....	0	0	0	0	0	9	0	0	0	0
Pacific.....	4	0	10	10	2	12	6	4	0	2

## INFLUENZA DEATH RATES

91 cities.....	33	61	17	59	20	60	34	50	37	44
New England.....	10	46	17	46	7	43	14	24	17	19
Middle Atlantic.....	8	68	13	49	13	42	39	40	42	32
East North Central.....	12	52	15	56	18	61	37	61	41	48
West North Central.....	12	35	26	56	49	68	29	74	32	59
South Atlantic.....	16	129	18	119	18	123	31	79	33	73
East South Central.....	38	64	44	64	25	140	44	76	13	140
West South Central.....	30	73	44	159	50	97	24	45	71	52
Mountain.....	52	52	60	17	78	61	69	17	34	44
Pacific.....	12	12	7	14	14	26	14	41	12	34

## PNEUMONIA DEATH RATES

91 cities.....	120	231	133	218	154	218	157	212	189	194
New England.....	144	286	117	291	120	276	192	236	192	185
Middle Atlantic.....	104	293	124	254	162	236	184	217	221	229
East North Central.....	96	175	108	182	133	187	110	192	158	154
West North Central.....	160	136	244	124	235	147	244	218	241	218
South Atlantic.....	165	325	174	348	163	340	173	313	196	265
East South Central.....	175	178	182	160	144	267	138	274	169	229
West South Central.....	172	214	121	178	165	228	108	221	172	149
Mountain.....	215	209	172	183	198	200	224	191	198	181
Pacific.....	100	72	137	72	91	70	104	91	102	101

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Columbia, S. C., not included.

## FOREIGN AND INSULAR

### SUSPECTED PLAGUE ON VESSEL

On February 15, 1932, the S. S. *Cadacceus* arrived at Avonmouth Docks, Bristol, England, from Rosario, San Lorenzo, and Buenos Aires, Argentina, loaded with grain. On quarantine inspection, a member of the crew was removed to the isolation hospital for observation with a tentative diagnosis of plague. The disease had its inception some three weeks before the patient came under the observation of the authorities, and the distinguishing symptoms had passed. An inspector sent by the British Ministry of Health came to the conclusion that the case was not plague. Only one rat was found on the ship. However, the crew's quarters and effects were disinfected and the entire crew was placed under surveillance, but no additional cases have been reported to date.

### CANADA

*Provinces—Communicable diseases—Week ended February 27, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended February 27, 1932, as follows:

Disease	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup>					
Nova Scotia	134			1	
New Brunswick <sup>1</sup>					
Quebec			2		14
Ontario	59		1		5
Manitoba		1			1
Saskatchewan					1
Alberta					2
British Columbia				4	
Total	193	1	8	5	23

<sup>1</sup> No case of any disease included in the table was reported during the week.

<sup>2</sup> No report received for the week.

*Quebec Province—Communicable diseases—Week ended February 27, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended February 27, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox	84	Puerperal septicemia	3
Diphtheria	35	Scarlet fever	98
Erysipelas	6	Tuberculosis, pulmonary	56
German measles	4	Tuberculosis, other forms	1
Measles	497	Typhoid fever	14
Poliomyelitis	2	Whooping cough	36



## ITALY

*Communicable diseases—Four weeks ended October 18, 1931.*—During the four weeks ended October 18, 1931, cases of certain communicable diseases were reported in Italy as follows:

Disease	Sept. 21-27		Sept. 28-Oct. 4		Oct. 5-11		Oct. 12-18	
	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected	Cases	Com-munes affected
Anthrax.....	51	43	42	36	30	28	36	31
Cerebrospinal meningitis.....	9	8	4	4	3	2	10	9
Chicken pox.....	33	27	52	33	84	47	119	71
Diphtheria and croup.....	416	239	468	275	486	291	563	320
Dysentery.....	23	16	26	16	14	12	14	11
Lethargic encephalitis.....							3	3
Measles.....	254	90	378	101	430	90	432	130
Poliomyelitis.....	7	7	15	14	15	12	19	16
Scarlet fever.....	296	126	423	160	461	177	539	216
Typhoid fever.....	1, 029	505	1, 046	509	839	447	882	449

## LATVIA

*Communicable diseases—December, 1931.*—Cases of certain communicable diseases were reported in Latvia during the month of December, 1931, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	3	Scarlet fever.....	55
Diphtheria.....	98	Tetanus.....	1
Erysipelas.....	25	Trachoma.....	97
Influenza.....	131	Typhoid fever.....	43
Measles.....	13	Typhus fever.....	12
Mumps.....	159	Whooping cough.....	90
Puerperal fever.....	14		

## MEXICO

*Tampico—Communicable diseases—February, 1932.*—During the month of February, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	4	2	Measles.....	9	—
Enteritis, various.....	37	38	Tuberculosis.....	—	16
Influenza.....	27	—	Whooping cough.....	24	1
Malaria.....	206	8			







**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## PLAQUE

[C indicates cases; D, deaths; P, present]

[illegible]













## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Aug 23— Sept. 19, 1931	Sept. 20—Oct. 17, 1931	Oct 18— Nov 14, 1931	Nov 15, Dec 12, 1931	Week ended—												Mar. 5, 1932	
						December, 1931				January, 1932				February, 1932					
						19	26	2	9	16	23	30	6	13	20	27			
Indo-China (see also table below):																			
Pnompenh.....	C	6	6	7	26	13	8	3	8	23	28	43	25	38	46	33			
Saigon and Cholon.....	D	3	3	5	12	9	6	2	7	18	22	35	17	24	23	33			
Iraq:																			
Baghdad.....	C	1			11	3	4	4	4	5	2	2	1	2	1	1			
Basra.....	D				5	1	2	2	3	9	2	2	2	2	1	1			
Mosul Liwa.....	D								2		1	1							
Ivory Coast (see table below).			5																
Jamaica.....	C				1														
Japan:																			
Taiwan.....	C																		
Yokohama.....	C				1				1	2		20			55				
Mexico (see also table below)																			
Chihuahua.....	D														1		1		
Jalisco (State)—Guadalajara.....	D	4	2	1	1	1				2	2	3	6	5	7				
Mexico City and surrounding territory.....	D	5	7	5	10	6				2									
Monterrey.....	D	2	4	1															
San Luis Potosi.....	D			2						1	1	2	1	2		1	2		
Torreón.....	D	2	1		7					2	2	3	1	1	1				
Torreón.....	D	1								2	2	1							
Morocco (see table below).																			
Netherlands, Friesland—Opsterland.....	C			1	15														
Nigeria.....	C		454	69	1														
Panama: Chiriqui.....	D		141	15	1														
Poland.....	D				3														
Portugal.....	C	1		2	1	1													
Lisbon.....	C																		
Operto.....	C	66	48	78	91	35	14	26	33	38	22	31	7	21	5	1			

[illegible]

**• Imported case.**













UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

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## SPECIAL ARTICLE

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The Inspection of Vessels for Rat Infestation



UNITED STATES  
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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

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## RAT INFESTATION INSPECTION OF VESSELS

By C. L. WILLIAMS, *Surgeon, United States Public Health Service*

Inspection of vessels to determine the presence and amount of rat infestation is not new; but, so far as the writer can determine, no detailed account of the methods pursued has yet been published.

### DERATIZATION AND EXEMPTION CERTIFICATES

The international form for deratization and deratization exemption certificates provides space for recording the amount of rat infestation and the rat harborages present in the various parts of the ship. Neither certificate is regarded as complete unless there appears in this space, in specified detail, a record of these conditions as determined by careful inspection. It is the policy of the Public Health Service to prescribe that its quarantine officers issue only completed certificates and to insist that those presented to them be completely filled out, as a requisite for their acceptance. The purpose of this policy is to present quarantine officers with a complete and accurate picture of rat infestation, present or potential, on board the ship as an aid in safely arriving at an immediate decision as to the vessel's quarantine status.

By international agreement, deratization and exemption certificates, when properly and competently executed, are almost universally accepted. In order that their high status may be maintained, it has become extremely important that the inspectors should be competent and reliable.

### PURPOSE OF INSPECTION

Inspection to determine rat infestation has two principal objects: One is to determine the presence or absence of rats; the other is to determine their location when present.

The import of the first of these is clearly recognized. Upon the presence or absence of rats is largely based the determination of whether or not the ship shall be fumigated.

The significance of the second object is not quite so obvious. It is, however, to secure information that is essential for the accurate evaluation of infestation estimates, for the effective application of fumigation, and for the institution and maintenance of rat proofing.

In respect to the latter two items, fumigation is very greatly improved by intensive treatment of infested harborages, while successful rat proofing absolutely depends on a knowledge of the location of harborages.

#### LOCATION OF INFESTATION

Infestation inspection as a guide to eradication procedure is best shown by illustration. One case will suffice. On the steamship *C. L.* a very large rat colony was confined to the storerooms in the poop, where the rats inhabited extensive harborage in the insulation around a cold storage room. The first fumigation, unguided by inspection, killed many rats (253), but failed to eradicate the colony. Six months later the ship returned with a still larger rat colony in the same location. On this occasion preliminary inspection disclosed the inhabited harborage, which was torn open and directly fumigated, as a preliminary to the general fumigation. Such treatment resulted in better than 99 per cent destruction of the rats, all together over 600 being killed. The cold storage room and adjacent storerooms were rat proofed while the ship was still in port. When it again returned, several months later, careful inspection revealed signs of but slight infestation, this being borne out by the recovery, on fumigation, of only four rats. The concentration of activities produced results. The holds, found rat-free when inspected, required and were given, scant attention. They yielded no rats on either of the first two fumigations, though harboring all four of those secured by the third.

#### INFLUENCE ON PERIODIC FUMIGATION

Inspection to determine the presence of rats has a practical determinative bearing in the case of the ship fumigated at periodic intervals. The object of fumigations on such ships is to remove a potential danger inherent in the presence of a rat colony. If there is no rat colony, the danger does not exist. By inspection the rat infestation status is determined, and on this a decision reached as to whether fumigation shall be performed or shall be waived.

In the case of a vessel from a plague-infected port, the logic of the situation is no less real; but one hesitates to base treatment of a danger, much more nearly actual, on an inspection report that may be in error. The thought is that a fumigant gas is not subject to human frailties and therefore safer. Even in this case, however, world opinion is tending to rationalization of quarantine procedure and, except in extreme instances, to depend more and more on determinable factors as guides to treatment.

#### REMANDS AND OTHER QUARANTINE MODIFICATIONS

The rat infestation status of a vessel, as discovered by inspection, may have a determining influence on such questions as whether a ship may be remanded to another port for fumigation, whether fumigation may be waived, whether fumigation shall be required before the ship goes to dock, etc. Obviously, a heavily rat-infested vessel should be deratized with as little delay as possible; but one on which there is little evidence of infestation may be granted certain privileges with reasonable safety.

#### EVIDENCE OF INFESTATION

Having outlined the purposes and value of infestation inspection, we may take next a description of the procedure itself.

It is well to begin inspection with inquiries of the ship's crew. When they report rats, their testimony is nearly always reliable as to their presence, though totally unreliable as to actual numbers. One rat, seen many times by various members of the crew, may become 100 rats in the telling. On the other hand, little reliance should be placed on negative statements by the crew, except that consistently negative statements generally preclude a heavy infestation.

The signs of rat infestation are those produced by the rats themselves. They are, in the order of their frequency, as follows:

1. Droppings.
2. Runways.
3. Tracks.
4. Gnawing.
5. Live rats (actually seen by the inspector).
6. Dead rats.
7. Nests.
8. Rat odor.

#### LIVE RATS

Rats are not infrequently seen during inspection of ships. If for every one seen, 20 are estimated, the estimate will rarely be less than the actuality. If it is possible to make the inspection during a period of quiet, live rats are more likely to appear, particularly if the inspector will remain quite still for several minutes or longer. They may sometimes be run out of loose dunnage. They are occasionally seen in loaded holds recently opened. As a rule, however, when specifically searched for, they are likely to remain out of sight until their harborages are broken open. When, despite the bustle of loading or unloading, live rats are constantly seen in a hold, a heavy infestation is certainly present.



## DEAD RATS

Old, dried carcasses of rats are definite signs of past infestation, but do not constitute evidence of present infestation. Bodies of rats which have recently died indicate present infestation, but are not positive evidence. If partly eaten, however, as is often the case, there is little doubt of the presence of live rats. Rats partly eaten by cats are badly mangled; those eaten by other rats are more cleanly handled, often the greater part of the viscera having been reached through a single hole through the body wall. As in the case of sighted live rats, the presence of dead rats usually indicates a heavy infestation. The presence of numbers of dead rats (10 or more), is almost invariably associated with a heavy infestation, unless recent destructive procedures have been carried out or an epizootic is in progress.

It is well to remember that the presence of dead rats may be due to infection with bubonic plague.

## DROPPINGS

This is the most constant sign of rat infestation and the one on which inspectors most rely. In the following pages the reader will find its importance repeatedly emphasized.

Like that of other rodents, the excreta of the rat is in small firm masses. These are rod-shaped, straight or slightly curved, with rounded ends. In size they vary from one-fourth inch long by one-sixteenth inch in diameter to three-fourths inch long by one-fourth inch in diameter. Nearly always they are quite dark or black in color. When freshly passed they are soft enough to be squeezed out of shape and often have a glistening, wet appearance. Within two or three days they dry and become hard. Later the surface becomes dull. Very old ones are dust or dirt covered, and may be discolored.

The size, consistency, number, and even the color of droppings may vary considerably with variations of food. Rats under observation have been noted to pass as few as 30 and as many as 180 droppings in 24 hours. In general, grain as food produces relatively few while the more moist foods, and those with much roughage, produce more and often larger droppings.

Droppings from *R. norvegicus* are larger than those from *R. rattus*.

Droppings from mice resemble those from rats in shape and color, but are distinctively smaller in size.

Rat droppings are passed singly at relatively frequent intervals. Consequently, though they may occur in considerable quantities within small areas, their arrangement is haphazard; they are not seen in small piles or grouped together, as is the case with some of the other rodents. They will be found wherever the rats roam, which is every-

where, but will be in greater numbers along their runways, near their harbors, and in secluded corners. They will be found in greatest numbers in places seldom cleaned or disturbed, such as the tops of partly inclosed tanks, the small shelves formed by the angle braces at bulkheads, the spaces between ribs, under boatswains' stores, under extra propellers, inside of pipe casings, and in similar locations. In infested loaded holds, droppings will always be found, in some measure, scattered over the cargo—strange to say, often in greatest amount directly under the hatch. The writer has never known this to fail, and will unhesitatingly deny the presence of rats in a loaded hold where droppings are not found on the cargo.

#### RUNWAYS

All colonizing animals establish runways. These are merely the usually traveled routes from one frequently visited locality to another. The constant passing of many individuals, each leaving a mark, finally produces a well-worn track, obvious to any eye and often giving a great deal of information to the experienced one. The body of the rat is dirty and the hair a trifle oily, so that wherever it rubs against a wall, climbs a pipe or angle iron, or swings under an obstruction, it leaves a dark mark. These marks are built up and extended by the constant passage of rats, the runway finally becoming clearly delineated. An experienced observer will detect a runway used by but few rats; runways used by many are plain to the most unobserving, though the unknowing may not realize their significance.

The ship rat prefers to travel overhead; and so, on account of this predilection, the most characteristic runways are those along overhead beams, particularly when these are interrupted at intervals by cross beams resting on them. It is at the points of contact that the rat marks its route; for, in swinging under the interrupting cross beam it makes a roughly semicircular mark below it, such a mark appearing under each cross member. Other locations may be the free edge of an angle iron, a pipe, an electric cable, the top of sheathing, as well as some less frequent routes.

Runways may be anywhere, but the best place to look for them is where one would never think of looking. The truth of this paradoxical statement may readily be verified by placing an experienced inspector and a neophyte on the same ship. The former will soon have spotted every run on the ship; the latter will take a month to find them all. This is partly due to man's instinct to direct his eyes to the ground, while the runways are mostly overhead; but also it is in part due to the secretive instinct of the rat, which leads this animal to keep even its runways hidden. For example, if a runway is up a pipe in a corner, it will not be up the side toward the room, but the side turned to the corner. Similarly, if along a telegraph casing, it

will generally be along the inside, that is, inside the casing, which must either be opened to reveal it, or else followed, literally inch by inch, to discover the openings for entrance and exit. Exactly such a procedure was required on one ship to locate a gas-proof harborage, in which rats had escaped through twenty-odd fumigations. A tedious search along a telegraph casing finally was rewarded by the discovery of a hole on top, directly below an electric cable. Along the cable a very heavily marked runway was visible for just 6 inches, when it disappeared into a 2-inch steel conduit, leading off from a 6-inch conduit, also steel, up to that time totally unsuspected as a rat refuge.

As a rule, runways are routes from one inclosure to another, or else from a harborage to a feeding ground, less often a general route connecting several inclosures. With this in mind, one looking for runways will endeavor to locate openings through partitions, when the runways leading from them on either side become apparent. Conversely, a runway spotted will, when followed, lead to an opening or to a harborage.

Runways are of the utmost importance to the rat proofer, since they show him where to place a barrier and where the harborage that must be closed or removed is located.

Like any other animal, rats leave tracks; that is, they leave tracks on soft surfaces. At first glance one would expect on a ship few soft surfaces; the steel decks certainly are anything but impressionable. However, there are such and their inspection will repay the inspector tenfold in time saved, for the total absence of rat tracks on impressionable surfaces is, next to absence of droppings on cargo, the most reliable of negative evidence.

The most constant impressionable surfaces on ships are found in the dust that collects on the upper surfaces of the battens along the sides of the holds, in the coal dust on the floors of bunkers, and in bulk cargo. On these the rat leaves a literally tell-tale trail, for the trail of its tail is as characteristic as the marks of its 4-toed paws.

In light dust the marks of the toes may be quite clear. On such a surface the dragging tail may also leave an irregular wavy line, though this is not constant and is often a broken track. The rat drags its tail only part of the time, usually only when moving slowly. In coal dust, care must be taken not to mistake the marks made by the edge of the coal shovel for tail marks. The former are quite straight while the latter are wavy.

Rat tracks along a batten can not be taken as positive evidence of the presence of live rats but evidence only that rats have been present, although if more than two weeks old they are usually discernibly obscured by fresh accretions of dust. Tracks on the floor of a bunker

can be taken as reasonable evidence of present infestation. Tracks on cargo are quite as positive as the presence of droppings, and their complete absence from bulk cargo is quite as reliable negative evidence as the absence of droppings. The complete absence of rat tracks in coal bunkers and on battens is, as has already been stated, excellent evidence of the absence of rats; but, to be taken as such, they must be carefully searched for—a rapid or cursory glance is not sufficient.

Occasionally rat tracks are seen on hard surfaces. An exceptional instance was due to rats traveling through wet coal dust so that they left clear-cut tracks and tail marks on the surface of a door, painted white, at the point where they balanced on the edge to jump to a beam above.

*Illuminating tracks.*—Rat tracks are often quite shallow and hence almost invisible when illuminated from above. With side lighting, however, they stand out clearly. In coal bunkers this method is most essential, but it makes the tracks stand out more clearly in any location, including bulk cargo.

Rat tracks on thin surfaces over hard bases, as along a batten or on the floor of a bunker, generally show the marks of the separate toes, but tracks in thick dust or on bulk cargo are usually only regularly spaced little pits, or craters.

#### GNAWING

Rats gnaw for three purposes, viz, to cut through an obstruction between one inclosure and another, to cut into a food container (actual or expected), and to eat. The first includes cutting a way into harborage, out of spaces in which the rat may be caught, and through partitions or similar barricades. The second comprises cutting into cargo or stores containers. The third includes cutting through the outer shell of some foods as well as their actual eating. Gnawing is always purposeful; it seldom even appears to be at random. In fact, as a rule, it is quite obvious what the rat was trying to accomplish.

These three types of cuttings have each a somewhat different significance according to the definiteness with which they can be dated. In the first instance they may indicate only past infestation which may or may not have disappeared, as indicated by other signs, although in the case of present infestation careful inspection will usually uncover some definitely recent cuttings. In the second instance, cutting of cargo or stores containers, the date of occurrence can usually be assigned within narrow limits. The time of stowing cargo is of course precisely dated, while provision stores are subject to fairly constant inspection. In the third instance, the date may be quite precisely assigned or may be hopelessly indefinite. When fresh foods are partly eaten, the date can usually be very closely calculated, partly because fresh foods are stored, as a rule, for short periods only, and partly because, on them, cut surfaces soon lose their fresh appear-

ance. When dry foods, particularly grain, are partly eaten, however, the date may be quite indefinite. On one hand the appearance of the grain may not change in months, and, on the other, grain sweepings may remain in the corners of ships' holds for long periods. When sweepings can be assigned definitely to a specific voyage, the cuttings may be dated within its limits.

Cuttings in fresh foods lose their fresh appearance within 24 hours, the cut surface drying and becoming discolored, while the edges tend to curl over it. Cuttings in fresh apples acquire a brownish discoloration within one or two hours. Cuttings in wood may present a fresh-appearing surface for a week or more unless rats have been passing over it, smearing the surface with grease and dirt from their bodies. Very recent cuttings in wood are associated with quite obviously chewed-out bits of wood. In a few days these tend to become scattered, lose their fresh appearance, and become dust covered, so that they merge more or less into the background. Recent cuttings of bagging, rope, baled goods, and the like are usually associated with the presence of frayed bits of the fabric.

The marks of a rat's incisor teeth are quite characteristic (in the absence of other rodents) and easily recognized. When eating from a large piece of food, the rat has a tendency to cut a hole and eat from the inside of the hole, sometimes scooping out a recess that it can get bodily into. The writer has seen a large watermelon entirely eaten out inside, leaving a complete shell with a single rat hole at one end. In eating grain, the rat invariably eats out the soft central portion of each kernel, discarding the rest. Grain weevils have the same habit, but they enter at the point of the grain and hollow it out from the inside, leaving a thin shell, while the rat bites straight through from side to side.

Rat gnawing is of great service in estimating the numbers of rats. A few old cuttings suggest but few rats. Numerous fresh cuttings suggest a large and growing colony expanding into more extensive quarters. On banana-carrying ships the amount of droppings is a very poor guide to an estimate, but the amount of fresh cutting into harborages is usually quite reliable evidence. Extensive rat damage to cargo is always the sign of a heavy infestation.

#### NESTS

Ninety per cent of rat nests are located inside of protective harborages. The other 10 per cent are built between, under, or inside pieces of cargo, or (a very small proportion) in corners of the deck. In consequence of such location, nests are not always seen during the course of an ordinary infestation inspection. As a rule, they need not be specifically searched out, unless other evidences of rat life are confusing so that the inspector finds it necessary to check against the presence



FIGURE 1 — Rat droppings of a white color due to eating the pithy shells (also shown in the picture) of a variety of oriental nut (approximately one-third reduction)



FIGURE 2 — Typical scattered arrangement of rat droppings on top of a water tank



FIGURE 3 — Rat tracks and dragging tail marks (right foreground) in bulk linseed

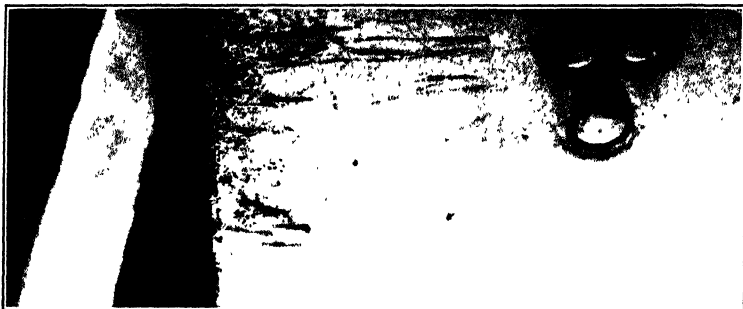


FIGURE 4.—Footprints and tail marks on a metal door made by rats after walking through wet coal dust. Rats balanced themselves here to jump to a hole through a partition

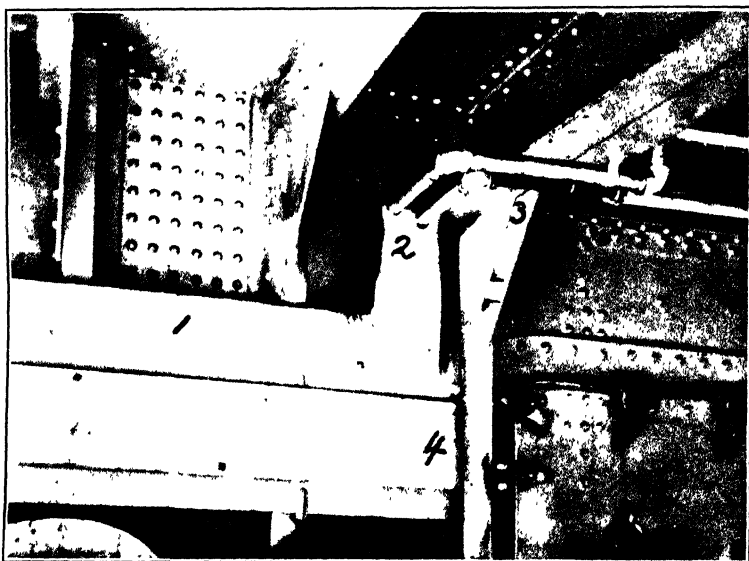


FIGURE 5.—Main road and three by-ways. Main rat run along top of wooden sheathing 1, up the edge of vertical pipe support 2, along the two pipes and under the main beam along the inner pipe 3, heavily blackened on underside by rats crawling along it upside down. The run continues along this inner pipe to another compartment. The by-ways are up the edge of the angle iron at right center 4, down the edge of angle iron at left center 5, from cross-beam above, and from horizontal portion of main beam onto the pipes 6



FIGURE 6.—Cold-storage insulation. An almost completely hidden rat hole under the angle of the pipe just above arrow

of nests and other signs inside of harborages. It is much more usual for the fumigators to uncover nests in the course of opening harborages to insure the entrance of gas.

Sometimes, however, the presence of nests can be reasonably determined by the appearance of bits of rubbish projecting through cracks in a casing or out of a rat hole. Nests in boatswains' stores—a frequent site when these remain undisturbed over considerable periods—may often be uncovered without too much labor. Nests under cargo are generally in plain sight (unless destroyed by stevedores) after the cargo has been removed.

The particular value of the discovery of rats' nests is both as corroborative evidence of the presence of rats and as evidence that breeding, and hence colony building, is taking place. Furthermore, in and near the nests are places where one expects to find fresh droppings. The presence only of old droppings about the nests is evidence that the rat infestation has disappeared or that the nest has been abandoned.

Rats' nests may be constructed of almost any soft material; the rat is not at all particular in this respect. It is common to find a much larger collection of material than is necessary for construction of the nest. In many cases this represents old nests, successively built one on top of the other. In other instances, however, it is a protective and secretive maneuver, the nest being in the center and accessible only through a single narrow opening. Sometimes the nest is simply hollowed out in an already existing collection of soft material, such as a pile of oakum, a bag of rags, etc. A favorite trick is to construct a nest between the coils of a stored hawser, parts of which are cut out to serve as nest lining. Hawsers are totally ruined in some instances.

It is sometimes easy and at other times quite difficult to determine whether nests are old or recent. An old nest is generally somewhat out of shape, while a new one is neatly rounded out and pressed on the inside. The age of droppings nearby is a guide, as is sometimes the apparent age of the materials entering into the structure and of remains of food scattered about. Young rats in a nest obviously denote recent construction as well as the presence of parents.

The numbers of nests are fair guides to the extent of the infestation. A single nest may represent but one pair of parent rats and their progeny, in all not over 10 or 12; but several fresh nests will generally represent from five to ten times as many rats as nests. Nests are sometimes exceedingly well hidden, so that in the presence of a considerable colony the inspector may locate only one or two or no nests. Occasions have been noted where as many as 30 rats have been taken from a ship on which painstaking search failed to reveal a single nest.



## RAT ODOR

The odor of rats is distinctive and characteristic. It is of a musty character, but, like all odors, can not be described accurately enough to be recognized therefrom. Unfortunately, it tends to persist for a considerable period after the rats are gone, so that it can not be classed as a positive indication of their presence. It is of value, however, as often giving to the inspector information that rats have been present, and thereby intensifying his search for other evidence. Rat odor may permeate an entire hold, when it suggests a heavy infestation, or it may be discernible only inside a casing, or only immediately about a nest. It is rather commonly noticeable in rat-infested storerooms. Alone it is of little value as evidence, but coupled with other signs it may help materially in locating infested compartments and in estimating the number of rats. Individuals vary considerably as to the acuteness of the sense of smell, and hence, vary in perception of this sign.

## LOCATION OF INFESTATION ON CARGO VESSELS

The localities most often infested by rats differ somewhat on cargo vessels, tankers, and passenger ships. Conditions and methods of procedure on cargo ships will first be described, and then the other types will be compared with these.

On cargo ships the preferred harborages are, in order of frequency, the holds, the bridge deck, the bunkers (on a coal-burning ship), the poop (when used as a storeroom), the provision storeroom, the forepeak, and the crew's quarters. Locations less frequently infested are the lifeboats, the fire and engine rooms, the officers' quarters, and the galley.

On the great majority of rat-infested cargo ships, rats will occupy one, some, or all of the holds, including the bunkers and bridge deck under this designation. On most of the other infested vessels they will be found confined to a single compartment or a definite unit of the ship. Most often this is the poop, when used as a general storeroom. Occasionally infestations occur only in the provision storeroom, or only in the forepeak, or only in the lifeboats, etc. On a very few ships, several superstructure units are infested in the absence of any infestation in the holds.

In the holds of the average cargo vessel, the harborages can be rapidly located and examined. Usually they are limited to pipe casings and raised flooring in the lower holds, pipe casings and overhead telegraph casings on the 'tween deck or shelter deck, and dunnage and stored machinery on any level. In the lower holds of some ships are ballast boxes or ballast along the keel, and in some (in the after holds), sheathing over the shaft alley. Fruit-carrying

ships always have a wooden sheathing covering all metal surfaces, while ships carrying perishable goods have one or more cold-storage holds or parts of holds. Bunkers are essentially holds. In them harborage is nearly always in pipe or telegraph casings.

When the poop is used for storage it is common to find it cut up by wooden partitions into varying sized spaces with double walls, sheathing against the side of the ship, and raised flooring. Here are frequently stored seldom used hawsers and cables, all manner of boatswain's stores, block and tackle, rigging, and junk. Not infrequently one or more compartments will be used for storing provisions, while on some ships one may find chickens, pigs, or even a cow or two. Exceptional harborage in the closed space over and around an ice box will be found in some cases. Sometimes only a small part of the poop, generally the afterpeak in such cases, is used for storage. As a rule, below the poop are tanks; but in some ships the storeroom is thus located, being entered directly from the space above or, by a separate small hatch, from the deck.

Provision storerooms may be in the poop, or in the bridge or shelter-deck space immediately below the officers' quarters, or below the galley. Very rarely is it in any other location on a cargo vessel. When inclosed by steel walls, as is often the case, it is rarely rat infested, but when the partitions are wood infestation may be expected. Harborage in them is usually restricted, so that the rats are likely to be living in, between, or under the stores, or are living elsewhere on the ship and invading the storeroom only for food. Infestation is usually quite obvious from droppings on the shelves. Runs are generally plainly marked, owing to the practice of painting the walls and fittings white. As a rule, only a few rats inhabit any given storeroom; but exceptions are sufficiently numerous that heavy infestation should not cause surprise.

The forepeak may open directly onto the weather deck, in which case infestation is unlikely, it may open into a relatively open space under the forecastle head, or it may open into crew's quarters located in the bow. In either of the latter instances infestation is not improbable. As a rule the chain locker opens into the forepeak or into the same space as the forepeak. Sometimes it, too, is infested. Usually the forepeak is two decks deep, a water tank occupying space below the second deck, but one going clear to the keel may be found at times. Nearly always forepeaks are used for boatswain's stores, much of which may be reserve stock seldom moved. As a rule, this stored material and the chains (in the chain locker) constitute the only harborage; but it may be quite sufficient for many rats, though more than 20 in a forepeak is rare.

The crew's quarters, in the vast majority of cargo ships, is either in the bow under the forecastle head or in the poop. When in the

former location harborage is likely to be quite limited, but in the latter case sheathing over the ship's sides is the rule. In either location, however, it is rather seldom rat infested, though the habits of the crew in bringing in food may attract visits of rats living in some near-by compartment. This is more frequent aft than forward. Because droppings are more frequently removed, rat infestation is usually more difficult to detect here than in other locations.

The lifeboats are sometimes rat infested, but harborage in them is rarely extensive.

Engine and fire rooms are located in the center of the ship (very rarely in the stern). Nearly always they are separated from the remainder of the vessel by steel bulkheads, as a rule impervious to rats. While harborage often exists in them, it is seldom extensive. Infestation of engine and firerooms alone is so extremely rare that it is standard practice to omit them from inspection when the holds are found rat free. Occasionally rat infestation occurs among engineers' stores in the shaft alley. Rats living in the bunkers and holds sometimes visit the engine and firerooms for water but seldom remain. An exception should be noted in the case of vessels in the shipyards, particularly if their stay has been protracted, in which case rats may invade the engine and firerooms in numbers in their search for food or warmth or because driven out of other parts by continuous activities of workmen. Several such instances have been noted.

On cargo vessels it is quite rare to find galleys infested, which is quite the reverse of conditions on passenger ships. The galley is nearly always on deck and almost totally devoid of harborage. It is also the scene of almost continuous activity for a large portion of the 24 hours in the day.

#### INSPECTION PROCEDURE ON CARGO VESSELS

Inspectors should have a definite routine. This accomplishes two purposes: It insures maximum speed and obviates missing some compartments.

The inspector's equipment consists of a suit of overalls and a flashlight. The overalls are not always required, though never out of place, but the flashlight is indispensable. A fairly accurate inspection may be accomplished without coming in contact with dirty surfaces, particularly on rat-free ships; but a thoroughly complete inspection can not be made on a rat-infested vessel without thoroughly soiling one's clothes if not protected by overalls. If pipe casings are to be opened a jimmy or short crowbar is required.

The usual procedure on cargo ships is to begin forward and work aft, excepting the engine and fire rooms and all superstructure above the weather deck, then returning to inspect the superstructure (and the engine and firerooms when indicated) from aft forward, ending

with the officers' quarters. The inspector examines first the compartments under the forecastle head, including forepeak, chain locker, paint locker, storeroom, and crew's quarters (if located here). Next the forward holds are taken in order, then the midship hold and bunkers, then the after holds, following which the poop and after-peak are inspected. Returning, he inspects the engineers' quarters and (when indicated) the engine room and fireroom (including the shaft alley); following these the galley and the line officers' quarters, which latter usually include the pantry and storeroom and the chart room and wheelhouse. Finally, the lifeboats, potato locker, and potential harborages on the open deck are inspected.

#### MINUTIE OF INSPECTION

In general it may be taken as axiomatic that rat signs are in out-of-the-way places, so that they must be searched for or must be uncovered. If rat signs are obvious, the infestation is heavy. On an empty ship, however, it is well to remember that the holds are nearly always swept up after unloading is completed, so that much (at times nearly all) rat evidence may have been removed in the process. Occasionally the ship's crew endeavors to remove or cover up rat signs, even to the point of painting over runs and covering rat holes, as well as sweeping up droppings.

On coming into a compartment the inspector first flashes his light over the floor, looking for obvious signs; then he examines the overhead structures for rat runs. What he sees in this first look may largely guide further search. Next he looks for harborages, and notes their location. The following step is to pry into all corners, both on the floor and at higher levels, open lockers, move dunnage and light stores, etc., look along ledges, along beams, examine dust collections, examine the angles for openings and the borders of all wooden partitions for rat holes. Then he carefully inspects harborages to note whether they are accessible and, if so, whether they show signs of occupancy, and finally traces rat runs into harborages or into adjoining compartments. If there are stored foodstuffs, they are inspected to note cutting of containers or partly eaten food.

*Forepeak.*—In the forepeak, droppings are the prime evidence. They are most often on the shelf that is set into the point of the bow, next in frequency in the after corners, and next on the side shelves or along the borders of the floor. Often they will be found in the folds of stored canvas articles, as windsails, etc., and often under stored material. In the chain locker a steel shelf, commonly found on the outer wall on either side, is the most common site for droppings. Nests may be found in stored materials, such as bags or piles of oakum, in the folds of canvas, the coils of rope, or in the

angles of the deck under seldom-moved stores. Runs may be noted usually up the edges of angle irons; they may point the way to openings into the crew's quarters or into the hold. If the upper level of the forepeak is free from signs, it is unlikely that any will be found lower; but this does not always hold true, so that at least the next level should be inspected.

Under the forecastle head runs are likely to be a more prominent sign than in the forepeak. This holds true whether the crew's quarters are located here or the space is used for stores. If there are food stores, such as a potato bin, a run is likely to lead into it. Cut potatoes are usually readily distinguished and may be the first sign noted. In addition to the types of places mentioned in the forepeak, droppings may be found on top of lockers and on the ledges formed by flat portions of overhead deck beams. Where there is sheathing, rat holes, leading to the space behind the sheathing, are most likely to be found in corners out of ordinary sight range. The most usual locations are in or over lockers or under permanent seats. Rat signs are very rarely found in paint or lamp lockers, which are usually small, steel-walled rooms.

*Holds.*—In cargo holds there are nearly always at least two levels, the 'tween deck and lower hold. One or more additional levels may be constituted by additional 'tween decks or by a shelter or bridge deck. In some small ships the 'tween deck may be missing.

*Droppings in holds.*—In the holds, droppings constitute the most readily discovered sign. On a heavily infested vessel they will be in evidence everywhere, often first seen right at the foot of the ladder by which the inspector descends (rats regularly use the ladders as runways between the different levels). When infestation is light, the discovery of droppings may require painstaking search.

On the 'tween decks droppings are most numerous along the borders of the deck, principally in the spaces between the ribs, in the corners, along the bulkheads, and around the hatch coaming. They may often be found around infested casings, along the battens, and on the horizontal portions of overhead beams. The heavy beams running fore and aft just outside the hatchways are often favorite runways and may exhibit tremendous collections of droppings. The fresh-water tanks, usually on the shelter or bridge deck, may exhibit on their tops (often inclosed) considerable collections of droppings. Beneath extra propellers and other spare machinery parts (often stored on the 'tween deck or shelter deck) are other likely spots, as are collections of boatswain's stores. Dunnage piles should never be overlooked, as droppings are frequently found on or under them.

In the lower holds, droppings should be looked for along the borders and particularly on the triangular horizontal braces in the angles

between the ship's sides and the bulkheads and on the upper surfaces of the fore and aft beams, of which there are usually two on either side between the bilge and the deck above. These can readily be reached by climbing up the battens. Droppings may be found around the pipe casings, which in the lower hold may be horizontal along the floor as well as vertical, or in the bilges, though in the latter only when they are dry. They are not uncommon under the floor; but to see them in this location one must usually raise one or more boards.

In loaded holds, droppings assume a determinative importance. Droppings on the cargo must have been left after the cargo was put in place, and so they are positive evidence of present infestation. Further, since the length of time the cargo has been in place is known, the number of droppings thereon present a relatively exact basis on which to calculate the numbers of rats. On the other hand, the total absence of droppings on cargo is absolute evidence that there are no live rats in the hold. An interesting practical observation is that, when present on cargo, a disproportionately large number of droppings are often observed directly under the weather deck hatch.

*Harborage in holds.*—In the holds the available harborage may give an immediate clue as to the possible extent of infestation. Total absence of harborage, or only harborage that can be demonstrated to be uninhabited, is, with few exceptions, associated with few or no rats. Most of the exceptions are in the cases of vessels engaged in extraordinarily rat-attractive trades, such as the grain trade between certain South American ports and Europe, the grain trade between Karachi and other oriental ports, or the coasting trade between Java and associated islands, or in the cases of ships that have taken aboard a sizable rat colony in the course of a single voyage, as sometimes occurs on trips to the east coast of South America, to Africa, or to the Orient. On the other hand, extensive harborage, with many runs and rat holes leading into it, is presumptive evidence of a large colony.

Pipe casings and telegraph casings are the usual harborage on all levels. The latter are nearly always overhead on the 'tween deck or shelter deck, run fore and aft and, because they frequently pass through two or more holds and into other compartments, may be the route of widespread dissemination of infestation. When a telegraph casing is discovered to be a runway, it must be inspected throughout its entire length to discover the various entrances and exits; usually these will be on top, or in corners so remote from view as to require the most remarkable contortions by the inspector to enable him to see them. Telegraph casings are one of the routes opening into the engine room, and so, when the casing is infested, its engine-room entrance should be inspected for runways leading into it.

In the lower hold there is often a heavy wooden flooring for the protection of the tanks that are usually built over the keel. On

some ships this is close to the underlying steel surface and the space below is inaccessible to rats, but on most vessels it is placed on 2-inch battens and, hence, offers to rats extensive harborage in the form of a series of spaces between each pair of battens, each space the width of the hold long, about 2 feet wide, and the height of the battens (2 inches) high. These spaces open into the bilges at either side so that their presence is most readily determined by removing a limber board, lying flat on the floor and, by leaning part way into the bilge, looking back under the floor. From this position it can be noted at once whether rats have burrowed runways through the dirt and débris that nearly always collects. Such runways will usually follow the battens and can often be illuminated (by the flashlight) from the bilges for a distance of 8 or 10 feet. Droppings may be seen, or the inspector may find himself face to face with a startled rat. It is not uncommon to find oil (from leaks in the tanks when these are used to store fuel oil) under the floor. In such cases no rats will be found there; but it is well to remember that sometimes the oil may not cover all the surface under the floor and that rats may be in the sections where it is absent.

Rat holes leading into the space under the floor are most common along the bulkheads or at the feet of supporting columns. Other entrances are via pipe casings and through the bilges. When the concrete that closes off the bilge from the hold in the spaces between the ribs is broken, rats may enter by that route.

It is usually not necessary for the infestation inspector to search for runways in the holds, though the rat-proofing inspector must locate them. In the holds, runways are hard to find unless the walls and decks are of a light color, a most unusual condition in any but refrigerated compartments. Occasionally, however, they may be seen on wooden bulkheads, along beams passing through bulkheads, or along ribs passing through the 'tween deck.

On the 'tween or shelter deck, the fresh-water tanks should be located and the space above and below carefully inspected for rat runs and droppings. It is not uncommon for the space under such tanks to be the principal harborage on the ship. In the same way, any small inclosed space in a hold (most often found on the shelter or 'tween deck) should receive more than casual attention.

The insulation of cold-storage compartments may afford harborage to rats infesting other parts of the hold, or to rats infesting the compartment itself or to both. In the former case the entrance will be through openings in the outer covering of the insulation, most often where a beam passes through it, or at a corner.

Another favored harborage is an insulated pipe casing, where pipes pass through an uninsulated hold to a cold compartment. Such casings are usually easily distinguishable by their size and location. They

will often repay close scrutiny. When these casings are overhead, which is common, rats most often gain access at the corners where the wooden sheathing is fitted between beams.

*Other signs in holds.*—It is worth while inspecting the dust on the upper surfaces of the battens for rat tracks. Their total absence is strong evidence of the absence of rats, and their numbers, when present, often constitute a guide to the extent of the infestation. When cargo presents an extensive impressionable surface, the presence or absence of rat tracks thereon is equally as reliable evidence as the presence or absence of droppings on cargo.

*Cold-storage holds.*—Inside cold-storage compartments rat droppings are usually the first signs noted, though sometimes cuttings of the stored foods are first seen. Droppings are searched for on the gratings over the floor, along the battens, on the stores or cargo present, and, in holds or compartments designed for cold-air ventilation, in the air shafts. They may also be found under the gratings, though often difficult to see in this location. Next in order are rat holes leading into the insulation, usually found at or near the corners, either top or bottom, or alongside the refrigerant pipes where these pass through the sheathing. Runways are often present but do not stand out against the usual neutral background of varnished woodwork.

The walls of cold-storage compartments are more or less obscured by the refrigerant pipes and the closely set battens in front of them, which give the rat an opportunity to display its secretive skill in hiding its burrows and runways. Some of the most experienced inspectors have been forced to report the presence of rats in cold rooms, without being able to find their harborage, and the writer will never forget seeing a large rat run swiftly up a pipe and disappear into the insulation, through a hole that he had missed on four previous inspections.

*Boatswain's store hold.*—Just aft of the after hatch there is found on some ships a small hatch opening directly into a boatswain's store-room, partitioned off from the 'tween deck (or shelter deck) of the after hold. This may or may not open into the poop. Rats often invade this space but seldom harbor in it. Droppings constitute the usual sign of infestation.

*Bunkers.*—In the bunkers, rat droppings and rat runways are not obvious. A dropping in coal dust may be, and usually is, most inconspicuous. Runways not only fail to show against the black background, but they are rapidly covered up by coal dust. In consequence, in empty or partly filled bunkers the inspector looks for another sign and omits full bunkers from inspection. On the floor of an empty coal bunker the rat must leave its track. Rat tracks may occur on any surface in a coal bunker, and, strange to say, are quite



as frequently found well out in the middle as along the sides. To see them, illumination must be from the side.

*Poop.*—In the poop the inspector will, in nearly all cases, find either the crew's quarters or a storeroom. In many instances there will be the crew's quarters and a storeroom, in which case the latter is often on a deck below, in space that, in other ships, is occupied by tanks. This may be entered through the crew's quarters, through the steering gear house, or through a separate hatch opening on deck. The after peak may be part of the poop or may be separate and entered through a hatch from the deck.

Crew's quarters in the poop are more likely to be rat infested than when located in the bow. Nearly always there is sheathing over the steel sides of the ship, usually accessible to rats. It is not uncommon to find a provision storeroom next to the quarters, this being the rule when oriental crews are carried. Rat infestation is generally detected by noting runways. Droppings may be found under bunks or seats, and in or on top of lockers. Rat holes, as usual, are in the most out-of-the-way places. It is common to find a casing for the telegraph leading to the steering engine or to a stern telegraph. This should always be looked for.

Storerooms in the poop are frequently cut up by partitions. Some of the compartments may have raised flooring or sheathing over the sides of the ship, or sheathing under the weather deck. When food stores are present, there frequently exists harborage and food in the same locality. Boatswain's stores are commonly located here, and often form extensive rat homes. The signs of infestation here are, primarily, droppings and runways. Because the distances traveled are short and the routes limited, runways are likely to be well marked. If infestation is heavy, they may be obvious. Generally they can be readily traced to harborages. As usual, they are mostly overhead or around the sides. Droppings are likely to be pretty well scattered, though in greater amount along the sides, on top of lockers, along runways, and among the stores. Rat cuttings or gnawings should be looked for. Rat nests may be found among the boatswain's stores, particularly in the coils of stored hawsers.

*Officers' quarters.*—In the engineers' and officers' quarters rat signs are quite rare. When present, there are nearly always droppings in out-of-the-way corners, under seats, behind the drawers, and in similar seldom-disturbed places. When droppings or other signs are found, the inspector should always look for a rat hole into the space behind the sheathing or through a partition. Runways may occasionally be observed.

*Provision storeroom.*—The provision storeroom may be below the bridge superstructure, usually opening through a hatch into the pantry above, or it may adjoin the pantry. Occasionally it is below the

galley or in the poop. As a rule, when in locations other than the poop it is not rat infested; but it may be heavily infested. When rats are present, droppings will invariably be found on the shelves, particularly the upper ones.

An ice box or cold-storage room may be in the poop, below the galley, adjoining the provision storeroom, or built on the deck. Infestation inside is unusual, but utilization of the insulation for harborage is only too common.

A potato locker is usually located on the deck. It may harbor rats or may be the feeding ground for rats living in the lifeboats. Cut potatoes are the most usual and prominent sign of infestation.

*Lifeboats.*—Lifeboats are easily inspected. Nearly always rats enter and leave them through the openings at either end of the covers, where the tackle passes through. In all life boats there is a small deck at the bow and at the stern, on which, if the boat is infested or frequently visited by rats, will be found droppings. A greasy mark around the edge of an opening in the cover and a rat-run along part of the tackle can often be demonstrated. The boxes holding the coiled rope of the hoisting tackle should not be overlooked. On tankers, the lifeboats should always be suspected.

#### INSPECTION OF TANKERS

Inspection on tankers is greatly simplified by reason of the elimination of holds. Rat life can not exist in the tanks, so that available spaces are the forepeak and forward hold, the bridge superstructure, the poop, the engine and fire rooms, and the lifeboats. The forepeaks and forward holds on tankers are alone rat infested with extreme rarity. They are too widely separated from a food supply. Their inspection, in the absence of rat signs elsewhere, may be cursory.

On tankers, the route of inspection is reversed, the inspector beginning aft and proceeding forward. In the stern he inspects the crew's quarters, mess room, galley, storerooms, and cold storage spaces. If rat life is indicated here, he then takes in the engine room and fireroom. Returning to the deck, he inspects the after lifeboats. Going next to the bridge superstructure, he takes in the officers' quarters, pantry, provision storeroom (if located here), and forward lifeboats. The forepeak and forehold (a small hold in the bow) are last. On a few tankers the crew's quarters are forward, in which case the forward end of the ship assumes more importance.

Many inspectors on tankers go first to the provision storeroom. The logic of this is obvious; as the cargo is inedible, any rats present must go to the storeroom for food. Occasionally, in the absence of rat signs in the storeroom, rats living in the lifeboats will be found feeding at the potato locker.

In all locations on tankers the inspector searches primarily for droppings, runways, and harborages. On the great majority of tankers, rat harborages are practically nonexistent. It is only when they are present that infestation is at all likely, which explains the special search for them. Special attention is given to the lifeboats, these being among the few possible harborage locations. If signs of infestation are found, it becomes important that the inhabited harborages be located both as a guide to the fumigators and because they can generally be eliminated at small expense.

#### INSPECTION OF PASSENGER VESSELS

Inspection of passenger vessels increases in difficulty practically in direct proportion to the square of the tonnage. Ships carrying but few passengers usually offer little more to inspect than cargo vessels, the passenger accommodations being only a few additional rooms in the officers' quarters. Large transatlantic liners, the other extreme, present a maze of decks, passages, galleys, mess rooms, saloons, varied types of passenger accommodations, holds, and a dozen other varieties of compartments that may require days of careful search to discover and properly inspect. A thoroughly competent inspection of a large liner requires a high degree of skill. If the inspection is for rat proofing, a minute knowledge of its construction must be secured first.

The usual route of infestation inspection is to begin on the highest level of the passenger accommodations and proceed down, taking each deck (more or less within the confines of that portion of the ship) in turn. Following this, the inspector proceeds forward and takes in the entire forward portion of the ship in the same manner, and then goes aft. However, such a routine must be subjected to considerable alteration on many ships, and, in the end, the inspector is likely to find himself going up and down, at one point and another, in order to follow the vagaries of marine architecture, as well as in accordance with the uses for which various parts of the ship may be modified.

Contrary to conditions on cargo vessels, the inspector is likely to find passenger and crew accommodations quite as badly or worse infested than the holds. This is due both to the presence of extensive harborage and to the presence of permanently maintained large stores of provisions. However, while rats may be in any part of the ship, they are more usual below the level of the main weather deck and in the working parts of the ship (except the engine room) than in passenger cabins, saloons, lounges, etc. They are much more easily detected in these locations, a fact that causes many inspectors to go first to galleys, storerooms, holds, and crew's quarters before inspecting compartments immediately inhabited by the passengers.

In first-class passenger accommodations, the surroundings are cleaned at short intervals, resulting in the removal of droppings and obliteration of runway markings.

Inspection in the forepeak, boatswain's storerooms, holds, and such locations does not materially differ from inspection of similar places on cargo vessels; but inspection in crew's quarters, galleys, storerooms, and in all places visited by passengers is mostly a search for runways and for places inaccessible to ordinary cleaning procedures, wherein droppings may be found. The discovery of these out-of-the-way spaces may severely test the detective abilities of the inspector, while the rat signs sometimes found in them may amaze the ship's officers, who frequently have no adequate conception of the locations visited by rats, or of their numbers. Locker rooms, small storerooms, small spaces housing ventilation motors, dumbwaiter housings, closed spaces, or lockers under stairways, and similar small compartments should be carefully searched out and inspected. It is in these that droppings and runways are least likely to have been disturbed.

Special mention must be made of the galleys. On the larger passenger vessels, it is almost universal practice to insulate the deck-head over the galley. This is done by packing the space (8 to 12 inches deep) between the sheathing and the deck above with some insulating material. Numerous openings large enough for rats to enter, unless the ship has been rat proofed, are provided at the corners, around beams, and around pipes, for their exclusive use. Such insulation has been found to accommodate as many as 200 rats.

The multiplicity of harborages and runway possibilities on the larger passenger vessels is likely to confuse the student inspector, who is often led astray in two directions: He may put too much time in searching for rats in unusual spots, and he may pass over unsuspected harborages because the surface fails to indicate their presence. In regard to the former, the inspector should constantly bear in mind that the old reliable standbys, the pipe casings and telegraph casings, are still among the preferred residence districts among rats on passenger vessels, while, as to the latter, he should be particularly alert to spot runways and should follow them with more care than on a cargo vessel, since they will often lead him to harborages into which he would never have thought of prying.

#### EXACT VERSUS GENERALIZED ESTIMATIONS OF INFESTATION

While it is true that many inspectors will consistently estimate, within a quite small margin of error, the precise numbers of rats on a ship, it is doubtful whether such precise estimates are of more value than those expressed in more generalized terms, always excepting the distinction between no rats and some rats. This is because

some of the various factors affecting estimates are too variable and indeterminate to permit of exact mathematical expression. For example, with all visible signs pointing to the presence of but two rats, such an estimate may, through the existence, concealed in a nest, of a recently born litter of, say, eight young rats, be 500 per cent in error. The mathematical error in such an instance, and in nearly all similar cases, is far more imposing than is the practical error, for the eight new-born rats are of very little immediate sanitary significance. An estimate of few rats, or of a single family, however, would have carried the same quarantine significance without being subject to too narrow numerical application. There is also a factor aside from those directly pointing to the number of rats actually present. This is the ability developed by the inspectors to judge the capabilities of the fumigation crews and the consequent tendency to modify their estimates in accordance with the number of rats they expect will be recovered by them, rather than make apparent overestimates, which they fear fumigation will not confirm. A distinct, apparently normal, tendency to underestimate, in cases of heavy infestation, has been noted.

It is indubitably true, however, that the greatest absolute numerical errors are made under the least important conditions; that is, when rats are numerous. This apparently paradoxical condition, since the more rats, the greater the quarantine menace, follows from the practically universal adoption at quarantine stations of a low level at which to draw the fumigation line, so that when rats are numerous on a ship, even a considerable error in the estimate of their actual numbers still puts them at a figure above that which determines fumigation. When rats are few, the estimates as to their numbers are more reliable and are made with much more confidence and with disregard of fumigation results. Where an inspector may hesitate to estimate 50 rats, when he believes the fumigators will recover only 20, any thought that they may get none when he estimates 5 fails to trouble him, since it can be met with a shrug and the obvious observation that only rats make rat droppings. The error is too plainly attached to the fumigators in such cases.

Of course, it is obviously easier to estimate exact numbers from a limited amount of rat signs than from a great many. A few examples will make this quite clear. A single set of rat tracks in the dust on a batten is positive evidence that one rat passed that way; similarly, a number of separate distinct tracks on the floor of a coal bunker could hardly have been the work of a multitude. On the other hand, a hodgepodge of tracks merely means many rats; it gives no real clue as to their precise numbers; the marks may equally well have been made by ten rats passing back and forth a hundred times, or by a hundred rats. Runways are the same; a faintly marked runway certainly has not been the route of travel for many rats—the inspector

can safely say not over four or five; but a heavily marked runway may have been made by 50 rats or 500. Sometimes as few as 10 or 12 rats, over a considerable period of time, may produce a very heavily marked runway indeed. The status of droppings is quite similar. A half dozen droppings in hold No. 2, and a half dozen more in the poop are almost certainly due to just two rats, one in each location, but the discovery of several hundred droppings scattered all over the ship gives no real basis for an exact estimate of numbers. Even a determination of the proportion of fresh droppings fails as a guide, unless definite information is at hand as to how long the infestation has existed. Furthermore, the inspector has not the time to be squeezing hundreds of droppings to see how many are fresh, while he might easily accomplish this in the case of a dozen or so.

One would judge from this that the most accurate estimate would be no rats. Experience has substantiated this view. The reason is quite plain: There is a sharp distinction between the absence and presence of fresh signs; there is no such sharp line between the signs of 5 rats and 10 rats, or between those produced by 20 rats and by 50 rats.

In view of the foregoing it should appear that, if instead of an exact estimate of the number of rats, it is a question of determining simply between four conditions, viz, absence of rats, slight (unimportant) infestation, moderate infestation (justifying eradivative measures), and heavy infestation, the report of a competent inspector would be more reliable. He should not make an appreciable error in one case in a hundred. Reports on this basis are in more accurate accord with the limitations of the evidence, but still furnish the basic information that is required, that is, whether the rat infestation is negligible or of sufficient proportions to justify fumigation or other eradivative measures. It also obviates any necessity to draw lines of procedure at hard and fast numerical points; factors such as distribution of the rats, relative danger of presence of infection, etc., may be given their proper weight without being arbitrarily pushed aside by an estimate of one or two rats above the line.

On the other hand, there is no question that a precise numerical estimate presents a clearer picture to others than do generalized statements. This is true even when the estimate is between limiting figures, such as 5 to 10 rats, or 20 to 30 rats. Usually, when a generalized statement is made, the hearers reduce it mentally to figures, these differing with the individuals. Moderate infestation may mean about 15 rats to one, 25 to another, and 40 or 50 to a third.

It is obvious that this question has two sides. At the New York quarantine station it is met by requiring inspectors to make generalized reports to boarding officers, but to submit precise numerical estimates to the fumigation division.

## TECHNIQUE OF ESTIMATING EXTENT OF INFESTATION

Accuracy of estimation necessarily depends on skill. This of course, can finally be acquired only through experience and practice. There are, however, certain general principles and details of technique that all inspectors observe, which will be herein set forth.

*No rats.*—Absence of infestation is not necessarily based on absence of signs, but must be based on the absence of *fresh* signs. No competent inspector ever reports a ship rat free on inferential or circumstantial evidence. Such a report is always primarily based on the absence of fresh signs. Principally this is an absence of fresh droppings. Even in the presence of numerous runways and much old droppings, an experienced inspector is often able definitely to determine that there are no live rats aboard, largely basing this on the absence of fresh droppings in places where at least a few should be, if live rats were on the ship. Of course a determination of the absence of droppings, when other signs indicate the past presence of rats, must be based on a painstakingly complete, as well as an expert, search. Also, it is of course true that the sight of live rats, the presence of bodies of rats which have recently died (except following fumigation), the presence of recent tracks, the presence of cuttings that can be definitely assigned to a recent date, will contradict even a total absence of droppings. As a matter of fact, however, such instances are so rare that they practically do not occur. In a rather wide experience, the writer has never seen a ship on which the presence of rats was established without fresh droppings being part of the evidence. While it is true that other signs may first call attention to the presence of rats, any reasonably complete search will reveal fresh droppings as well.

Old runways, old gnawings, harborages still showing signs of habitation, old nests, old rat carcasses, old droppings, even rat odor, may be present in the absence of rats. In such cases, infestation has existed but has been eliminated. It is largely because of this that droppings, which can readily be determined as fresh or old, have taken such a prominent place among the various rat signs as indicators of present infestation. When inspections and estimates of remaining infestation are required on ships that have recently been fumigated, dependence must be put almost wholly on the apparent age of droppings.

On loaded ships the total absence of rat droppings on the cargo has invariably been associated, in the writer's experience, with absence of rats in the holds.

Although droppings have been assigned a preeminent position in the determination of the absence of rat life, there are many ships on which the more or less obvious absence of other signs first produces on the inspector the impression of freedom from infestation. In fact, this may quickly become so plain to him that his search for droppings is greatly curtailed; if they are not found in the most likely places, he

does not look further. For example, the entire absence of harborage, or the presence of only a few small harborages that inspection reveals uninhabited, informs the inspector at once that rats are unlikely to be present and that if they are present their droppings must appear in the open. A rapid look along the borders and in the corners may be quite sufficient to confirm the first impression. In the superstructure a total absence of runways is rarely associated with the presence of rats and never with any great number of them.

The absence of rat tracks on impressionable surfaces is extremely good evidence of the absence of rats.

The statements of stevedores as to whether they have seen live rats during unloading is fairly good evidence as to their presence or absence. Nearly always when there is a material number of rats in the holds, they will be seen at one time or another by stevedores, who usually have little hesitancy in imparting the information.

*Few rats.*—Next we consider the determination of but few rats (unimportant infestation). Droppings again take first place, but a modified first place. First, they must not be numerous; this is obvious. Second, they must not be widespread. Third, it must be known that the ship has not had a recent cleaning sufficiently thorough to remove all or nearly all droppings. Fourth, the cargo carried must be considered, this being most important in the case of banana ships.

The first point being obvious, we proceed to the second. It should be readily recognized that even a quite limited number of droppings scattered all over the ship suggests numbers. For example, the presence of a few fresh droppings (they may not total more than twenty) in every one of five separate holds certainly indicates more than a few rats. The only widespread occurrence of a few droppings consistent with the presence of few rats is when they are found on a shelter deck covering three or more holds, in the practical absence of droppings on the lower levels. The occurrence of separated small collections of droppings in different parts of a ship, however, is not only consistent with few rats, but indicative of it. The finding of a few droppings in the forepeak and a few in No. 4 hold, with none in other parts of the ship, practically insures the presence of but one or two rats in each of these locations, and the absence of any general infestation.

In regard to the third point, it is regular practice to clean the holds after the cargo has been removed. While it is true that it is unusual to find this clean-up to include all the corners and out-of-the-way places, it does happen that some vessels are exceedingly well policed, and it also happens that sometimes a very thorough effort is made to remove all rat signs.

In setting down the fourth point, the writer was tempted to word it "Fourth, the vessel must not be a banana ship," because of the quite remarkable relative insignificance of droppings as an indication of the



extent of the infestation on these vessels. Partly this is due to the presence of large numbers of small, black ends from the bananas, which resemble rat droppings, and, hence, confuse and hide them, but is also partly due to the rats spending a large part of their time in the very extensive harborages, and to the relative absence of retired corners and shelves in the holds, these being closed in by the sheathing. Other cargoes may cause confusion; wheat and some other grains sometimes exhibit numerous black kernels that resemble small rat droppings, while some foodstuffs are infested by a small black insect that is astonishingly like a rat dropping in appearance. Ore dust sometimes covers up droppings or may make them appear old. Coal dust renders them almost indistinguishable.

The presence of extensive inhabited harborages, numerous runways, fresh cuttings, particularly cuttings of stores and cargo, nests not obviously old, recently dead rats, and particularly the sight of live rats, all largely contradict the evidence of but few droppings. As a rule, however, the signs check with each other, it being quite rare that other signs point to many rats while the number and location of fresh droppings suggest but few (exceptions, of course, occur in the case of recently fumigated vessels).

Tracks in coal dust and tracks in bulk cargo are sometimes extremely accurate indications of but few rats. When the surface susceptible to tracks is present, but the tracks are few, the number of rats can not be large. The writer, having made several estimates of a single rat, on the basis of a few, obviously single, trails over the surface of bulk linseed, has not as yet seen more than one recovered in these cases, although in one or two instances even the one could not be found. On some occasions inspectors have purposely obliterated all tracks over a given area and based an estimate of the rats present on the number of new tracks seen on the following day.

In the holds, tracks in dust constitute a reasonably accurate indicator when few in number; any large number of rats would make a large number of tracks. When numerous, the time element must modify the estimate, since, if the impressionable surface has been present over a considerable period, a large number of tracks may easily have been made by but few rats repeatedly passing over the same spots. The writer vividly recalls a fumigator estimating one large rat in a hold, ore laden, in which tracks all around the edges were quite numerous. He maintained that the tracks were mostly clear-cut, showing the toes, that they were all of one size, and that droppings, in addition to being all large, were very few in number. After fumigation, a very painstaking search disclosed just one large rat.

The evaluation of rat tracks as evidence is an intriguing study and one that will often repay close observation.

Variation in size of rat droppings is sometimes a clear indication of the approximate number of rats. The size of the droppings is largely governed by the size of the rats; consequently, when one finds a few large droppings and a somewhat greater number of a smaller size, the natural conclusion is that there is one rat family present, consisting of several small ones (three to nine are the usual limits) and at least one parent. The presence of small droppings only is rare. It indicates usually that the parents have emigrated to some other part of the ship.

The presence of only large droppings excludes young rats, except of a size still confined to the nest. This conclusion considerably reduces the likelihood of error in making low estimates, since, if one can exclude an indeterminate number of young rats, a large variant is eliminated. Of course it sometimes is a bit disconcerting to have an estimate of two rats, thoroughly accurate on the basis of signs noted, utterly spoiled by the fumigators' digging out a nest containing 11 infant rats—probably its location indicated by the body of a parent just outside the harborage.

In judging the number of rats from the droppings, the total of both old and fresh, as well as the degree of age, are important factors. For example, a large number of very old droppings and a few fresh ones, with few or none of an intermediate age, clearly indicate a heavy past infestation, that has been eliminated, and a recent light reinfestation. On the other hand, large numbers of droppings of varying age appearance, with types approximately leading up to the fresh, is rather suggestive of a relatively heavy infestation even though the actual fresh droppings are few. The history of eradication procedures on the ship should be determined in such cases. A recent fumigation or extensive trapping, or even an effective poisoning, may adequately account for the conditions noted.

*Many rats.*—Coming now to the question of many rats, one finds the accuracy of a numerical estimate so greatly affected by indeterminate conditions that it is rarely that such estimates are better than approximations. Fortunately, the actual numbers are a matter of comparatively little moment. The important thing is to determine whether the rats are between zero and a few, or are more than a few. This can be done, and has been done, by numerous inspectors in routine work, with remarkable precision. As the number of rats increases, while it becomes much easier to state definitely that there are more than a few, it becomes increasingly difficult specifically to state just how many there are.

The difficulty arises from several sources, the most common being that when large numbers of rats are found, they have, as a rule, been present over a considerable period. If given time, a relatively small number of rats may give rise to a considerable quantity of rat signs.

On the other hand, experience has repeatedly shown that a relatively small amount of rat signs may sometimes be associated with a considerable number of rats. This latter condition is particularly true on ships where very extensive harborage exists, and is largely due to the rats remaining within the harborage except when foraging. On vessels with relatively cramped harborage, the rats roam the holds, creating better marked runways and leaving droppings in places where they can be seen. On fruit ships, harborage in the hold is often very extensive indeed. In addition, as already stated, the dried-up black tips of the bananas greatly resemble rat droppings and, being profusely scattered over the deck, render an accurate count of the latter quite difficult. Low estimates on such vessels should be made with caution. The writer has seen quite a number of 10- to 20- rat estimates on fruit ships proved too low by recoveries following fumigation of 40 or more. Wherever possible, the inspector should consult a fruit ship's past fumigation record before predicting the precise number of rats that it carries. Some other factors are variations in the number of droppings with different diets, concealed runways such as those inside a telegraph casing, removal of signs by the ship's crew, etc.

As a rule, heavy infestation (100 rats or more) is associated with rat signs in all holds, as well as in some of the other compartments. Exceptions to this rule, however, are numerous. When it is not true, its converse generally holds good, that is, that rats are exceptionally abundant in one compartment, or in one portion of the ship. Sometimes all the rats are in the forward portion of the ship; sometimes all are aft. Again, the great majority may be in a single compartment, as a provision storeroom, or in a cold-storage space. The heaviest infestation the writer ever saw was entirely confined to the poop, which included quarters for the oriental (Indian) crew, a provision storeroom, and an ice box, the insulation of the latter being the principal harborage. Every one of the six hundred and odd rats on the ship was in this location.

As has already been mentioned, the sight of live rats is strongly indicative of numbers, the usual rule being to multiply the number of live rats seen by 20 to get the probable total infestation. This rule, of course, is subject to modification and rather wide variation. It should be checked against other rat signs and the estimate reduced or increased as indicated. On some ships rats are so little molested that they appear at all times. While this indicates a considerable infestation, the rule of 20 for 1 must be reduced, sometimes to as low as 3 for 1. Live rats seen by stevedores during unloading operations can not be multiplied according to this rule, for the reasons that stevedores are in the holds over considerable periods of time, that moving pieces of cargo rout out rats hiding between or under them, and that the stevedores are naturally given to exaggeration. Their

statements as to the size of the rats seen are totally unreliable; they are very prone to employ the gross exaggeration "big as cats," usually accompanied by holding the hands some 3 feet apart to indicate the enormous length of the monsters.

Bodies of rats which have died recently, particularly partly eaten ones, suggest heavy infestation. When several are found, they too may be multiplied by 20 (provided other signs check) to arrive at the probable total. A single partly eaten carcass, however, does not mean a great deal, and one not eaten may even suggest a limited infestation, for rats are quite prone to eat the bodies of their dead fellows, even in the presence of abundant other food.

*Distribution.*—When rats are very numerous, the amount of rat signs constitutes the best guide to their numbers; when they are present in only moderate numbers, their location may be a better indication. This often holds true whether it is applied to a single compartment (provided it is relatively large, such as a hold) or to the whole ship. A very large number of droppings, including many fresh ones, indicates many rats. A relatively small number may indicate at least a moderate infestation if widely scattered, while confined to a single location they suggest but few rats. The same is true of runways, cuttings, and inhabited harborages. This applies particularly to the latter when they are limited, such as a few isolated casings. An inspector, finding in a hold a single inhabited casing with a collection of droppings near its entrance and another collection on a shelf nearby, but not more than half a dozen or so elsewhere in the hold, would probably estimate two to four rats. If approximately the same number of droppings were scattered in all parts of the hold, certainly if they were on different levels his estimate would increase to six. The discovery of a second inhabited harborage would raise it to eight or more. On the other hand, should he find 200 or 300 fresh droppings and 4 or 5 inhabited harborages (or one extensive harborage), he would certainly figure 30 to 40 rats or more for that hold alone. Fifteen to twenty rats would be indicated by distinctly too many droppings for a few to produce, scattered in practically all parts of the hold, though usually more numerous on the level where the principal harborage is located.

When we consider the ship as a whole, distribution becomes distinctly more informative. It has already been mentioned that a very few droppings, in each of five holds, indicates at least a moderate infestation. Five rats, one for each hold, would be the absolute minimum estimate, but it would be so remarkable to see such an even distribution that no competent inspector would estimate less than 10, 2 for each hold. However, the same number of droppings confined to a shelter deck extending over the five holds, with no droppings in the lower levels, would constitute such a shrinkage of distribution as to justify reducing the estimate by half—to five rats.

The above illustration will suggest to the reader at once that the degree of isolation of the compartments in which the rat signs are found is important. Signs of infestation in all of five holds, separated from each other by rat-proof bulkheads, indicate more rats than in the same holds connected by an overlying shelter deck without bulkheads, or in the same holds with a runway, such as a telegraph casing, passing through them. The same holds true when rat signs are found in one or more holds and in a storeroom or crew's quarters. If the latter are quite distinct, more rats are indicated than when a telegraph casing connects them. Similarly, rat signs in the lifeboats and in a storeroom below decks strongly suggests separate colonies in both places, but, when in the lifeboats and in a potato locker on deck, obviously the same set of rats is involved.

The significance of distribution of signs is such as to cause most inspectors to figure their estimates by adding up the estimates for the various infested locations. For example, an estimate of 4 rats in the forepeak, 3 in No. 2 hold, 5 in the bunkers, 2 in No. 4 hold, and 8 in the poop would total 20 rats for the ship. The report would be moderate infestation of 20 to 30 rats.

*Experience and skill.*—Experience is a necessity in acquiring ability to estimate precise numbers of rats. It should be associated with competent fumigations to prevent the setting up of inaccurate standards. It is quite astonishing how closely the estimates of an expert inspector will check with the recoveries of a first-class fumigating crew. The writer has observed men whose estimates rarely varied more than 10 per cent from the recoveries, and, more astonishing, has seen them re-search ships on which recoveries fell below their estimates, and pull out, from obscure harborages, additional dead rats. One very remarkable instance confirmed an estimate of 35 rats, after a recovery of only 21, when the inspector went directly to a hidden (that is, missed by the fumigators) telegraph casing, broke it open, and pulled out exactly 14 rats; a most painstaking search thereafter failed to uncover a single additional rat.

As stated under the section on exact versus general estimations, generalized reports may be preferred to definite numerical estimates. Such a method of reporting will make for better statistical accuracy, since it permits wider margins. It is doubtful, however, whether it produces as high a degree of technical accuracy. An inspector required to report in general terms is likely to acquire the habit of observing, calculating, and finally inspecting, in general terms. On the other hand, inspection against mediocre fumigation is more likely to deteriorate under precise estimates than under approximate estimates, since the inspector, finding fumigation recoveries consistently below his figures, is naturally inclined to modify them, the modification becoming more specific when there appear precise figures for comparison.

## DETERMINATION OF QUARANTINE TREATMENT

Where general estimates are required, the administrative office should be careful not to turn them into precise estimates by assigning them hard and fast specific limits. For example, where the estimated presence of 5 rats is set as the line between slight and moderate infestation and 20 rats as that between moderate and heavy, then these figures automatically become precise estimates for the corresponding reports; that is, "few rats" means less than 5, "moderate infestation" between 5 and 20, and so on. It is true that it is much simpler to make determinations as to what procedures shall be instituted when definite figures are used, and they at least give the appearance of impartiality; but it will be readily appreciated that there is very little practical difference between the presence of 4 rats and 5 rats when it comes to determining whether a ship should be fumigated or not, and that there are so many other factors that affect its potential sanitary menace that it would appear that an arbitrary numerical dead-line was basically illogical and unjust.

The enumeration of some of these other factors will help to make this point clear. The ports of call are obviously of first importance, for one plague-infected rat means far more than a thousand not infected. Obviously, therefore, a greater degree of infestation is allowable in the case of ships from clean ports than in the case of those from plague-infected ports. Another factor is the length of the voyage. A relatively large rat colony is required to maintain infection on a voyage of a month or more, whereas one rat may carry it over four or five days. A third factor is the distribution on the ship. Twenty rats distributed evenly in five holds are far less likely to maintain an epizootic than the same 20 rats concentrated in one hold. In regard to the ship from reported clean ports, while even a large colony on board may not be of immediate menace, it constitutes a potential menace in that undiscovered infection may be present in a port of call, and in that on a future voyage the ship may visit infected ports. The practice of fumigating ships, regularly running to reported clean ports, only once in six months, therefore produces a contradictory factor; for, while the presence of 10 or 20 rats may have no immediate sanitary significance, if they are not destroyed they may, in six months, increase to 200 or 300 rats. It should be clear, then, that it is illogical that quarantine treatment should be determined solely on any arbitrary number of estimated rats, even though such a standard may be most convenient.

The quarantine treatment of a ship is determined by the administrative officer, not by the inspector. The administrative officer, however, accords to the inspector's report a position of major importance in arriving at a decision, modifying and correlating it with all other data concerning the vessel. Frequently the infestation status is

the determining factor, but not always by any means. Just what decision to make under various circumstances is outside the scope of this paper; but the modifying circumstances themselves are briefly considered in a following section.

#### DIFFERENTIATION BETWEEN SLIGHT AND MODERATE INFESTATION

A study of the various factors has shown that by far the most important point is the differentiation between slight and moderate rat infestation. In the majority of cases a report of moderate (or heavier) infestation will, *ipso facto*, become the basis for deciding on fumigation, while a report of slight (or no) infestation will become the permissive basis for waiving fumigation. Both the administrative officer and the inspector, therefore, must have in mind some figures limiting these conditions. It goes without saying that both should have the same standard. The dividing zone should be sufficiently elastic to be adaptable to modifying conditions. Its elasticity, however, and also its extent will depend largely on the competency of the inspector. With an expert inspector it can be put close to the actual lower limit of moderate infestation, but when dealing with one inexperienced or untrained it must be safeguarded by placing it well within the actual figures for slight infestation.

It is impossible to amplify the above remarks without going into specific figures. The reader is cautioned, however, that those mentioned in the following paragraph are mainly for illustrative purposes, to make clear the points involved, and that they are expressions of the personal opinion of the writer, specifically in respect to ships at continental United States ports. The limit of slight infestation should be sharply reduced for application at ports not far removed from infected ports, according to the time involved. In the Orient, for example, where the time, from port to port, is within a few days and plague infection is present in many of the ports, permissible rat infestation might well be reduced to zero.

In the writer's opinion (for ships at continental United States ports) 20 rats or more constitute a moderate infestation, 50 or more a heavy infestation. Less than 20 rats may or may not be regarded as a slight infestation, according as other factors apply, but less than 5 rats definitely constitutes slight infestation. Between 5 and 20 rats lies the dividing zone. Within its extent the treatment of individual ships should be determined on the basis of all the factors involved. If other factors are all unfavorable, the lowest limit, 5 rats, should apply; if all are favorable, the upper limit, 20 rats.

There are some exceptional circumstances that warrant raising the figure for permissible infestation. To use an extreme example, a ship operating exclusively between Eastport, Me., and Iceland might carry a very considerable rat colony without becoming a

quarantine menace worth considering. A more probable, but equally applicable, one would be a whaling vessel that had made no contact with shore for six months or more. The case of a ship from clean ports desiring to proceed to its home port for deratization may also come in this class.

#### FACTORS TO BE CONSIDERED

In this discussion, factors other than the actual numbers of rats have been repeatedly mentioned, some specifically referred to, others not. It will probably be well to cite briefly and discuss all of them in this section.

*Ports of call.*—Of prime importance are the ports of call. What these have been at once places a ship in either a suspect class or in one of relatively much less sanitary importance. Certain ports are of particular importance due to epidemic or epizootic conditions therein.

*Time element.*—A ship that has touched at an infected port and, thereafter, for two months only at clean ports is obviously far less likely to harbor infection than one 20 days out from the last infected port, and this, again, is of lesser menace than one 8 days out from such a port.

*Fumigation and inspection record.*—When there is available a record of past fumigations and inspections of a ship, it is of great assistance in arriving at an estimate of the present infestation. Most ships hold fairly true to their record. When this is negative, one expects to find no rats, or at most only a few; when it shows a persistently moderate infestation or infestations varying between slight and moderate, a moderate or slight infestation estimate may be expected; when large numbers of rats appear in the record, a heavy infestation estimate is looked for. Failure of the inspection estimate to check with the past record should invite attention and suggest a search of other factors for the cause. A record of persistently low infestation suggests unfavorable conditions on the ship and a slow increase of the rat colony; persistently heavy infestations suggest the opposite, probably including the existence of extensive deep harborage.

*Interval between fumigations.*—When a ship last fumigated two months previously shows evidence of many rats, it is a sign of a rapidly growing colony, a sudden heavy reinfestation from shore, or an ineffective fumigation. On the other hand, when few signs are found on one fumigated six months prior to inspection, it is proper to assume that the colony is growing very slowly. Consistently positive fumigations on a ship fumigated at short intervals, two to three months, constitute positive evidence of a persistent colony protected by deep harborage.

*Rat-proofing status.*—On a completely rat-proof ship it is difficult for a colony of any material proportions to exist. On one on which



the more extensive harborage have been eliminated, the colony will nearly always be much reduced. It is entirely logical, therefore, to place more reliance on a low inspection estimate when the ship is wholly or even partially rat-proof. Furthermore, a colony is far less likely to increase rapidly on a rat-proof ship. There are two types of exceptions: One is the case of ships regularly in the grain trade from exceptionally rat-infested ports; the other is the unusual case of a ship taking aboard a large number of rats in one lot of cargo.

*Trade route and cargoes.*—The effect of trade routes and cargoes is extensively discussed in another paper by the present writer. It is sufficient to state here that on some routes rat infestation is quite unusual, and, generally, when it occurs, is of slight extent.

*Rat distribution on the ship.*—It has already been noted that a moderate infestation, confined to one compartment, is of greater sanitary significance than the same number of rats distributed throughout the ship.

*Harborage.*—Ships exhibiting extensive rat harborage are naturally suspected of heavy infestation. The presence of such harborage also inspires the belief that, under the shelter of its protection, a small nucleus of rats, if not at once eliminated, may soon grow to a large colony.

*Presence of cargo.*—Fumigation on a loaded vessel is not as effective as fumigation of one when empty. This brings in an important factor; for, on ships from clean ports, fumigated only at intervals, fumigation should be carried out when empty. Such a ship when carrying cargo for two or more ports may properly be remanded to the port where it will be empty. On the other hand, a ship from an infected location may subject the port of arrival to a greater danger of infection, if permitted to unload before fumigation, than if fumigated loaded before going to dock. If rats are few, however, it may be better policy to take the risk in order to secure greater effectiveness of fumigation.

*Length of stay in port.*—Obviously, a ship that will remain only during the daylight hours of one day may be permitted a decidedly greater rat infestation than one which will remain two weeks.

*Location in port.*—A ship in the stream is very much less dangerous than one at a dock; one at an oil dock is less dangerous than one at a general merchandise pier, and this in turn is less dangerous than one at a grain elevator; one at a rat-proof dock is less likely to infect the port than one at a rat-infested dock.

*Projected quarantine treatment.*—The treatment under consideration must enter as a modifying factor. When it is a question of remand, the infestation status should be largely determinative in the case of ships from infected ports; such infested ships should be refused the remand privilege. On ships periodically fumigated, it may be better

to remand, even those heavily infested, to secure the greater effectiveness of fumigation when empty. Waiving fumigation so as to permit fumigation at a home port may be more appropriate in the face of a decidedly greater infestation than when fumigation is to be waived for six months. Successful trapping may serve in lieu of fumigation when the infestation is not too great.

#### DETERMINATION OF HARBORAGE

Harborage is a subject discussed at length in papers on rat proofing, by other writers, and will not be further taken up here. Of course, the well-trained inspector must be familiar with rat harborage, since it plays a most important part in his work. It is mentioned here, however, mainly to bring out that the inspector should note the location and type of harborages, since knowledge of this factor is required by the administrative officer as one factor in sizing up the situation.

#### REPORTS

Inspection reports should be written. They should include the following data:

1. Estimate of total infestation.
2. Location of infestation with approximate estimate for each compartment or unit.
3. Kind, amount, and location of evidence on which the estimate is based.
4. Kind, amount, and location of harborage, with notation as to what harborage is occupied by rats and which is the main harborage.
5. The amount and location of cargo.
6. Description of any factors affecting the accuracy of the inspection (sweeping up of droppings, painting out of runways, cargo sweepings simulating droppings, and similar factors).
7. Rat destructive or eradivative procedures preceding the inspection (fumigation, trapping, destruction of harborage, rat proofing, etc.).
8. Any factors that might interfere with eradivative procedures (cargo over bilges, hidden harborages, full bunkers, rats in deck harborages, etc.).
9. Any other data that may affect the quarantine status of the ship, or that may assist the fumigation crew or the rat-proofing inspectors.

#### RECORDS

Inspection reports should be recorded in the same manner as are fumigation records. They are of practically equal value. Both fumigation results and inspection reports should be recorded, as to

essentials, on readily accessible filing cards, alphabetically arranged according to names of ships.

## DEATHS DURING WEEK ENDED MARCH 12, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended March 12, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 12, 1932	Correspond- ing week, 1931
Policies in force.....	73, 837, 899	75, 096, 936
Number of death claims.....	15, 338	16, 248
Death claims per 1,000 policies in force, annual rate.....	10. 9	11. 3
Death claims per 1,000 policies, first 10 weeks of year, annual rate.....	10. 1	11. 3

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended March 12, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 12, 1932				Corresponding week, 1931		Death rate <sup>1</sup> for the first 10 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mor- tality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (83 cities).....	9,364	13.4	648	54	13.8	855	12.4	14.2
Akron.....	46	9.1	5	62	10.3	7	8.0	8.6
Albany.....	32	12.8	1	21	12.5	3	14.2	15.5
Atlanta.....	70	12.9	6	58	20.7	20	14.2	16.8
White.....	37	10.3	2	29	15.6	7	11.2	13.8
Colored.....	33	18.0	4	115	30.8	13	20.2	22.8
Baltimore.....	238	15.2	19	67	19.0	30	14.4	17.8
White.....	167	13.0	13	59	17.8	21	13.3	16.5
Colored.....	71	24.7	6	96	24.9	9	19.4	23.7
Birmingham.....	66	12.5	9	94	15.9	6	12.5	15.0
White.....	33	10.0	4	66	13.8	4	10.4	11.5
Colored.....	33	16.4	5	135	19.3	2	15.8	20.6
Boston.....	267	17.0	22	66	14.5	19	15.3	17.0
Bridgeport.....	37	13.1	4	71	11.7	1	11.9	13.6
Buffalo.....	173	15.3	16	77	15.3	15	13.3	15.4
Cambridge.....	34	15.5	4	83	11.9	1	13.7	14.0
Camden.....	52	22.8	4	70	19.3	8	15.5	18.5
Canton.....	35	16.9	0	0	14.6	0	10.3	11.5
Chicago.....	703	10.4	41	40	11.2	79	11.2	12.3
Cincinnati.....	142	16.1	8	51	16.2	4	16.2	18.3
Cleveland.....	231	13.1	12	39	14.0	19	11.3	12.6
Columbus.....	86	15.0	4	40	16.1	4	14.9	14.9
Dallas.....	54	10.0	6	-----	12.8	7	11.6	12.5
White.....	47	10.5	4	-----	11.1	5	10.9	11.1
Colored.....	7	7.5	2	-----	20.9	2	15.0	19.1
Dayton.....	63	13.8	3	43	13.1	0	11.8	12.7
Denver.....	89	15.8	5	49	16.8	9	17.0	16.0
Des Moines.....	30	10.7	3	51	15.5	2	11.8	12.4
Detroit.....	370	11.2	38	68	9.6	41	8.7	9.9
Duluth.....	16	8.2	1	29	7.2	0	9.8	12.3
El Paso.....	32	15.6	9	-----	13.4	5	15.0	18.4
Erie.....	35	15.4	1	21	9.3	3	11.1	11.5
Fall River.....	22	10.0	2	53	14.9	3	12.8	13.9
Flint.....	37	11.4	4	59	10.2	7	9.1	9.1
Fort Worth.....	26	8.6	8	-----	14.3	5	10.5	11.6
White.....	24	8.7	3	-----	15.6	5	10.1	11.2
Colored.....	4	7.8	0	-----	7.7	0	12.5	18.6

<sup>1</sup> footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended March 12, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 12, 1932				Corresponding week, 1931		Death rate for the first 10 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Grand Rapids	35	10.5	1	17	12.5	1	9.1	10.0
Houston <sup>1</sup>	65	10.5	4	—	11.6	7	11.0	12.2
White	49	10.7	2	—	11.5	6	10.4	11.3
Colored	16	9.8	2	—	11.9	1	12.7	14.6
Indianapolis <sup>1</sup>	106	14.8	8	85	15.8	5	14.0	15.5
White	88	14.0	7	64	14.5	5	13.4	15.0
Colored	18	20.4	1	69	25.4	0	18.1	19.4
Jersey City	87	14.2	6	50	14.5	16	11.4	14.3
Kansas City, Kans. <sup>1</sup>	32	13.5	1	22	16.5	7	13.3	17.1
White	28	14.6	1	27	13.6	5	13.1	16.4
Colored	4	8.8	0	0	28.8	2	14.3	24.2
Kansas City, Mo.	115	14.4	6	68	17.2	9	13.1	15.5
Knoxville <sup>1</sup>	33	15.4	4	101	20.1	2	11.9	14.9
White	29	16.2	4	112	21.7	2	11.2	13.9
Colored	4	11.4	0	0	11.7	0	15.1	20.2
Long Beach	26	8.4	0	0	9.2	2	10.8	10.3
Los Angeles	258	9.8	21	62	11.8	19	12.3	12.0
Louisville <sup>1</sup>	73	12.4	2	18	36.4	13	14.2	19.4
White	52	10.4	1	10	32.2	10	12.5	17.3
Colored	21	23.0	1	75	59.0	3	23.1	30.5
Lowell <sup>1</sup>	21	11.0	1	26	16.1	6	14.8	15.0
Lynn	25	12.7	1	28	13.7	2	11.8	12.9
Memphis <sup>1</sup>	74	14.7	7	76	24.6	11	16.9	17.9
White	41	13.2	4	68	20.2	4	12.8	15.4
Colored	33	17.1	3	90	31.6	7	23.4	21.9
Miami <sup>1</sup>	24	11.0	2	58	19.5	2	12.5	14.6
White	17	10.0	2	78	18.5	0	12.1	13.9
Colored	7	14.5	0	0	22.7	2	13.8	17.2
Milwaukee	129	11.2	4	19	11.2	17	9.7	11.0
Minneapolis	122	13.2	8	52	11.2	19	11.6	12.3
Nashville <sup>1</sup>	55	18.3	6	90	17.1	4	14.5	18.5
White	38	17.4	5	98	16.2	3	13.8	16.0
Colored	17	20.7	1	62	19.5	1	16.3	25.2
New Bedford <sup>1</sup>	24	11.1	1	29	9.3	2	13.1	13.3
New Haven	44	14.1	3	60	17.9	0	12.7	13.8
New Orleans <sup>1</sup>	159	17.5	10	57	17.5	14	15.6	19.6
White	99	15.4	4	35	15.0	6	13.1	16.1
Colored	60	22.8	6	98	23.6	8	21.8	28.1
New York	1,985	14.4	112	50	12.4	144	11.6	13.9
Bronx Borough	297	11.2	20	58	8.2	17	8.8	10.1
Brooklyn Borough	718	14.0	48	53	11.7	62	10.8	13.0
Manhattan Borough	704	20.7	34	49	19.1	46	17.6	21.1
Queens Borough	200	8.6	4	17	7.6	14	7.5	9.2
Richmond Borough	66	20.6	6	118	14.7	5	14.6	15.0
Newark, N. J.	121	14.1	12	66	13.9	13	11.6	14.2
Oakland	70	12.2	3	38	11.8	2	11.9	12.1
Oklahoma City	34	8.6	3	41	12.5	8	9.9	11.8
Omaha	57	13.6	3	34	10.8	2	15.4	14.5
Paterson	40	15.0	4	73	17.7	1	12.9	16.6
Peoria	32	15.0	3	88	13.9	2	12.8	14.9
Philadelphia	529	14.0	36	66	15.1	64	13.0	16.6
Pittsburgh	244	18.7	25	114	20.8	39	15.3	18.4
Portland, Oreg.	77	12.9	1	13	12.1	1	12.7	12.9
Providence	70	14.3	9	87	12.3	7	14.9	15.9
Richmond <sup>1</sup>	46	13.0	0	0	19.0	5	15.3	18.4
White	29	11.4	0	0	16.3	3	12.9	15.3
Colored	17	16.8	0	0	25.6	2	21.2	26.1
Rochester	103	16.1	9	86	14.6	9	12.3	14.2
St. Louis	226	14.2	10	36	16.2	18	14.1	18.8
St. Paul	60	11.2	3	32	13.4	3	11.1	11.3
Salt Lake City <sup>1</sup>	36	13.0	3	47	15.7	2	12.1	12.5
San Antonio	81	17.2	11	—	14.6	7	18.2	15.4
San Diego	53	17.0	4	87	10.7	2	17.2	15.8
San Francisco	187	14.8	8	55	14.2	8	14.4	14.9
Schenectady	22	11.9	3	87	8.7	3	11.3	12.1
Seattle	98	13.6	3	30	15.4	3	12.6	13.1
Somerville	25	12.3	0	0	9.9	2	9.8	12.0

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended March 12, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Mar. 12, 1932				Corresponding week, 1931		Death rate for the first 10 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
South Bend.....	18	8.5	1	29	5.8	0	8.4	9.1
Spokane.....	25	11.2	2	58	11.7	4	12.5	12.7
Springfield, Mass.....	36	12.2	3	51	17.1	7	11.8	14.7
Syracuse.....	32	12.6	6	77	9.1	4	11.9	13.0
Tacoma.....	17	8.2	0	0	18.4	7	12.0	15.3
Tampa.....	26	12.0	3	86	15.4	2	12.3	15.7
White.....	20	12.3	1	35	12.6	0	12.0	14.0
Colored.....	6	13.8	2	317	25.8	2	13.5	21.8
Toledo.....	87	15.1	8	87	13.3	4	18.0	13.5
Trenton.....	55	23.2	5	99	18.5	3	15.6	19.7
Utica.....	26	13.2	3	85	15.3	2	15.6	16.7
Washington, D. C. <sup>1</sup> .....	172	18.2	11	62	16.4	10	16.7	18.8
White.....	112	16.4	5	41	14.8	4	15.1	16.3
Colored.....	60	22.9	6	107	20.5	6	20.8	25.3
Waterbury.....	16	8.2	0	0	13.4	5	9.7	11.4
Wilmington, Del. <sup>1</sup> .....	35	17.2	3	68	15.7	3	17.4	16.8
Worcester.....	59	15.5	3	42	11.6	8	13.1	15.3
Yonkers.....	22	8.1	0	0	6.8	1	7.5	10.7
Youngstown.....	38	11.3	9	146	13.0	8	10.6	12.0

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 78 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended March 19, 1932, and March 21, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 19, 1932, and March 21, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931
<b>New England States:</b>								
Maine.....	3	1	32	51	307	71	1	0
New Hampshire.....	2			2	6	23	0	0
Vermont.....	3	2			73	9	0	0
Massachusetts.....	42	52	9	9	479	500	3	1
Rhode Island.....	5	6		6	355	8	0	0
Connecticut.....	8	6	70	17	200	704	9	2
<b>Middle Atlantic States:</b>								
New York.....	110	124	1 244	1 47	2, 251	1, 901	13	18
New Jersey.....	22	52	205	51	224	687	1	5
Pennsylvania.....	104	101			2, 029	3, 503	3	8
<b>East North Central States:</b>								
Ohio.....	38	43	198	55	516	520	0	3
Indiana.....	39	25	294	34	65	654	10	7
Illinois.....	88	106	426	64	346	1, 689	4	12
Michigan.....	43	42	110	79	942	147	6	14
Wisconsin.....	10	13	773	78	574	314	2	1
<b>West North Central States:</b>								
Minnesota.....	10	20	2	1	12	112	2	2
Iowa.....	9	4			4	20	0	2
Missouri.....	30	29	26	65	56	349	0	15
North Dakota.....	3				95	11	0	0
South Dakota.....	5	11	16		25	80	2	0
Nebraska.....	9	11	22	3	3	7	1	0
Kansas.....	27	24	3	34	240	24	1	0
<b>South Atlantic States:</b>								
Delaware.....		3		2	1	120	0	0
Maryland.....	20	11	263	99	53	1, 228	0	1
District of Columbia.....	11	11	2	5	3	223	0	5
Virginia.....							1	
West Virginia.....	14	14	378	95	626	58	0	1
North Carolina.....	15	17	52	118	571	698	3	5
South Carolina.....	8	17	1, 477	1, 088	84	127	0	1
Georgia.....	7	10	266	630	88	151	1	1
Florida.....	14	14	5	83	4	289	0	3
<b>East South Central States:</b>								
Kentucky.....	23		1, 045		96	415	6	3
Tennessee.....	11	4	2, 675	292	149	197	2	1
Alabama.....	9	13	66	402	1	543	1	18
Mississippi.....	12	12					1	2
<b>West South Central States:</b>								
Arkansas.....	8	7	282	285		35	1	2
Louisiana.....	23	19	22	34	56	38	3	5
Oklahoma.....	12	19	791	140	12	24	1	1
Texas.....	30	17	460	133	27	71	1	1

1 New York City only.

2 Week ended Friday.

3 Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended March 19, 1932, and March 21, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931
<b>Mountain States:</b>								
Montana.....		3	105		95	8	0	0
Idaho.....		1	2	2	2	4	0	0
Wyoming.....				3	5	5	0	0
Colorado.....	12	5			82	106	1	2
New Mexico.....	18	4	690	6	53	96	0	2
Arizona.....	2	1	27	12	2	132	0	5
Utah.....	1	1		15	1	2	0	2
<b>Pacific States:</b>								
Washington.....		5		1	623	40	1	1
Oregon.....	8	6	201	204	173	86	1	0
California.....	92	48	138	430	524	1,378	3	4
<b>Total reported.....</b>	<b>969</b>	<b>934</b>	<b>11,377</b>	<b>4,675</b>	<b>12,133</b>	<b>17,548</b>	<b>76</b>	<b>150</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931
<b>New England States:</b>								
Maine.....	0	0	29	43	0	0	0	1
New Hampshire.....	0	0	41	1	0	0	0	0
Vermont.....	0	0	8	8	4	0	0	0
Massachusetts.....	0	0	504	409	0	0	2	3
Rhode Island.....	0	0	50	49	0	0	1	0
Connecticut.....	0	0	125	54	0	0	0	0
<b>Middle Atlantic States:</b>								
New York.....	2	0	1,741	923	6	1	4	5
New Jersey.....	0	0	288	313	0	0	2	2
Pennsylvania.....	0	2	1,030	555	0	0	13	9
<b>East North Central States:</b>								
Ohio.....	1	1	349	398	38	46	9	6
Indiana.....	0	5	166	340	11	119	6	1
Illinois.....	0	1	443	567	23	39	6	5
Michigan.....	1	0	446	439	13	20	14	10
Wisconsin.....	0	1	69	166	0	6	2	0
<b>West North Central States:</b>								
Minnesota.....	0	0	124	96	4	5	2	0
Iowa.....	0	1	64	120	39	80	2	1
Missouri.....	0	0	59	349	8	55	1	3
North Dakota.....	0	1	10	12	4	4	0	1
South Dakota.....	0	0	11	25	14	27	1	0
Nebraska.....	0	0	32	45	8	82	0	2
Kansas.....	0	3	48	60	4	106	0	0
<b>South Atlantic States:</b>								
Delaware.....	0	0	16	25	0	0	0	0
Maryland.....	0	0	130	78	0	0	4	2
District of Columbia.....	0	0	29	32	0	0	0	1
Virginia.....	1							
West Virginia.....	0	0	38	18	0	11	10	2
North Carolina.....	1	0	62	62	3	0	3	1
South Carolina.....	0	0	6	10	0	0	4	2
Georgia.....	0	1	10	110	1	9	23	23
Florida.....	0	0	5	5	0	0	5	1
<b>East South Central States:</b>								
Kentucky.....	0	0	117	58	4	14	16	1
Tennessee.....	1	0	29	37	19	16	7	4
Alabama.....	0	1	22	29	17	8	7	7
Mississippi.....	1	0	11	23	31	24	6	3
<b>West South Central States:</b>								
Arkansas.....	0	0	11	23	22	22	1	4
Louisiana.....	0	0	21	23	3	24	14	5
Oklahoma.....	0	0	17	45	8	67	0	2
Texas.....	0	0	43	23	72	54	4	2

\* Week ended Friday.

\* Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 19, 1932, and March 21, 1931—Continued*

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931	Week ended Mar. 19, 1932	Week ended Mar. 21, 1931
<b>Mountain States:</b>								
Montana.....	1	0	38	20	2	6	0	2
Idaho.....	0	0	9	7	4	1	0	0
Wyoming.....	0	0	12	35	0	4	3	0
Colorado.....	0	0	37	59	0	3	0	0
New Mexico.....	0	1	11	12	0	4	1	2
Arizona.....	0	0	8	9	0	9	0	0
Utah.....	0	0	7	16	0	1	1	0
<b>Pacific States:</b>								
Washington.....	0	0	29	51	13	57	1	2
Oregon.....	0	1	23	17	11	43	0	2
California.....	3	1	162	125	8	32	4	6
<b>Total reported.....</b>	<b>12</b>	<b>20</b>	<b>6, 566</b>	<b>5, 923</b>	<b>391</b>	<b>990</b>	<b>160</b>	<b>115</b>

<sup>1</sup> Week ended Friday.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Men- gococ- cus menin- gitis	Diph- theria	Infl- enza	Ma- laria	Mea- sles	Pellag- ra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>February, 1932</i>										
Colorado.....	5	36	4		202		1	139	6	3
Indiana.....	30	237	400		408		3	541	76	14
Massachusetts.....	6	226	62	1	1, 566		4	2, 070	5	13
Michigan.....	7	193	276		1, 803	1	4	1, 939	11	30
New Jersey.....	13	185	280		576		5	1, 062	0	8
North Dakota.....	2	20	43		257		1	13	34	2
Vermont.....					526		1	61	78	7

*February, 1932*

Anthrax:		Cases	Mumps:		Cases
Massachusetts.....		1	Colorado.....		251
<b>Chicken pox:</b>			Indiana.....		377
Colorado.....		355	Massachusetts.....		1, 168
Indiana.....		542	Michigan.....		1, 378
Massachusetts.....		919	New Jersey.....		448
Michigan.....		1, 412	North Dakota.....		124
New Jersey.....		1, 409	Vermont.....		267
North Dakota.....		88	<b>Ophthalmia neonatorum:</b>		
Vermont.....		168	Massachusetts.....		112
<b>Dysentery:</b>			New Jersey.....		2
Massachusetts.....		1	<b>Rabies:</b>		
<b>German measles:</b>			Indiana.....		1
Colorado.....		3	<b>Scabies:</b>		
Massachusetts.....		62	Colorado.....		1
New Jersey.....		48	<b>Septic sore throat:</b>		
<b>Impetigo contagiosa:</b>			Indiana.....		1
Colorado.....		2	Massachusetts.....		14
<b>Lead poisoning:</b>			Michigan.....		85
New Jersey.....		4	North Dakota.....		1
<b>Lethargic encephalitis:</b>			<b>Tetanus:</b>		
Massachusetts.....		1	Massachusetts.....		1
Michigan.....		1	New Jersey.....		1
New Jersey.....		1	<b>Trachoma:</b>		
North Dakota.....		1	Indiana.....		1



Trachoma—Continued.	Cases	Vincent's angina:	Cases
Massachusetts.....	1	Colorado.....	4
New Jersey.....	1	Indiana.....	2
Tularemia:		Whooping cough:	
Michigan.....	3	Colorado.....	87
Typhus fever:		Indiana.....	471
New Jersey.....	2	Massachusetts.....	853
Undulant fever:		Michigan.....	1,167
Colorado.....	3	New Jersey.....	1,700
Michigan.....	5	North Dakota.....	10
New Jersey.....	3	Vermont.....	169
Vermont.....	1		

### RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of February, 1932, by departments of health of States named to other State health departments*

Disease	California	Illinois	Massachusetts	Minnesota	New York
Diphtheria.....			1		
Scarlet fever.....					1
Tuberculosis.....	15	8		16	
Typhoid fever.....	1			1	

### ADMISSIONS TO HOSPITALS FOR THE INSANE, JUNE, 1930

Reports for the month of June, 1930, showing new admissions to hospitals for the care and treatment of the insane were received by the Public Health Service from 113 hospitals, located in 37 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 178,529 patients on June 30, 1930, 95,544 males and 82,985 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of June, 1930, by psychoses:

Psychoses	Male	Female	Total
1. Traumatic psychoses.....	17	3	20
2. Senile psychoses.....	163	149	312
3. Psychoses with cerebral arteriosclerosis.....	195	118	308
4. General paralysis.....	238	67	305
5. Psychoses with cerebral syphilis.....	30	11	41
6. Psychoses with Huntington's chorea.....	0	6	6
7. Psychoses with brain tumor.....	0	1	1
8. Psychoses with other brain or nervous disease.....	34	14	48
9. Alcohol psychoses.....	138	12	150
10. Psychoses due to drugs and other exogenous toxins.....	0	8	17
11. Psychoses with pellagra.....	13	27	40
12. Psychoses with other somatic diseases.....	34	45	79
13. Manic-depressive psychoses.....	219	256	475
14. Involution melancholia.....	15	39	54
15. Dementia praecox (schizophrenia).....	404	313	717
16. Paranoia and paranoid conditions.....	35	47	82
17. Epileptic psychoses.....	63	31	94
18. Psychoneuroses and neuroses.....	18	50	68
19. Psychoses with psychopathic personality.....	19	11	30
20. Psychoses with mental deficiency.....	59	39	98
21. Undiagnosed psychoses.....	172	97	269
22. Without psychosis.....	184	65	249
Total.....	2,059	1,404	3,463

During the month of June, 1930, there were 3,463 new admissions to the hospitals, 59.5 per cent of these new admissions being males and 40.5 per cent females, the ratio being 147 males per 100 females. Five hundred and eighteen of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,945 new admissions for whom provisional diagnoses were made. Of these 2,945 patients, cases of dementia præcox constituted 24.3 per cent; manic-depressive psychoses, 16.1 per cent; senile psychoses, 10.6 per cent; psychoses with cerebral arteriosclerosis, 10.5 per cent; and general paralysis, 10.4 per cent. These five classes accounted for 71.9 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on June 30, 1930:

	Male	Female	Total
Patients on books last day of month:			
In hospitals.....	86,116	75,793	161,909
On parole or otherwise absent, but still on books.....	9,428	7,192	16,620
Total.....	95,544	82,985	178,529

Of the 178,529 patients, 9,428 males and 7,192 females were on parole or otherwise absent but still on the books at the end of the month—9.9 per cent of the males, 8.7 per cent of the females, and 9.3 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,019,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended March 12, 1932, and March 14, 1931*

	1932	1931	Estimated expectancy
<b>Diphtheria:</b> <i>Cases reported</i>			
46 States.....	1,041	998	
97 cities.....	383	418	778
<b>Measles:</b>			
46 States.....	13,085	17,665	
97 cities.....	4,370	6,076	
<b>Meningococcus meningitis:</b>			
46 States.....	77	180	
97 cities.....	41	79	
<b>Poliomyelitis: 46 States.....</b>	17	19	
<b>Scarlet fever:</b>			
46 States.....	6,438	6,229	
97 cities.....	3,134	2,405	1,624
<b>Smallpox:</b>			
46 States.....	290	894	
97 cities.....	32	125	56
<b>Typhoid fever:</b>			
46 States.....	176	97	
97 cities.....	30	21	38
<b>Deaths reported</b>			
<b>Influenza and pneumonia: 91 cities.....</b>	1,129	1,478	
<b>Smallpox:</b>			
91 cities.....	1	0	
Chicago, Ill.....	1	0	

## City reports for week ended March 12, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	2	1	1	1	0	110	0	5
New Hampshire:								
Concord.....	0	0	0	-----	0	3	0	2
Manchester.....	0	0	0	-----	2	0	0	0
Nashua.....	0	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	1	1
Burlington.....	0	0	0	-----	0	4	2	0
Massachusetts:								
Boston.....	56	25	19	-----	2	16	46	25
Fall River.....	10	3	1	-----	0	29	1	1
Springfield.....	23	3	0	-----	0	12	22	2
Worcester.....	6	2	1	1	0	1	34	8
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	6	7	0	-----	1	198	6	15
Connecticut:								
Bridgeport.....	2	5	0	3	3	2	0	7
Hartford.....	15	4	0	-----	2	5	11	13
New Haven.....	20	1	0	7	0	0	12	2
MIDDLE ATLANTIC								
New York:								
Buffalo.....	34	11	4	-----	2	15	12	29
New York.....	220	196	102	324	75	149	158	373
Rochester.....	8	5	1	-----	0	562	10	6
Syracuse.....	27	3	0	-----	0	453	11	4
New Jersey:								
Camden.....	16	4	3	1	0	1	6	3
Newark.....	54	14	2	34	0	11	59	19
Trenton.....	10	2	0	8	2	0	8	10
Pennsylvania:								
Philadelphia.....	199	60	9	13	12	18	64	57
Pittsburgh.....	25	17	4	11	16	245	64	58
Reading.....	42	2	1	-----	0	3	0	4
Scranton.....	3	-----	1	-----	-----	1	1	-----
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	2	7	8	2	9	0	0	17
Cleveland.....	95	26	7	185	7	697	112	35
Columbus.....	7	1	5	5	5	0	3	5
Toledo.....	15	5	3	8	7	42	0	9
Indiana:								
Fort Wayne.....	3	3	10	-----	1	0	0	0
Indianapolis.....	39	5	1	-----	3	10	78	17
South Bend.....	2	2	0	-----	1	1	0	0
Terre Haute.....	1	0	0	-----	0	0	0	1
Illinois:								
Chicago.....	121	59	31	16	16	202	5	64
Springfield.....	1	0	0	2	1	1	13	1

## City reports for week ended March 12, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Michigan:								
Detroit.....	70	45	28	56	15	98	24	47
Flint.....	18	2	0	74	0	91	82	7
Grand Rapids.....	6	1	0	-----	4	131	17	5
Wisconsin:								
Kenosha.....	1	0	0	3	0	2	0	2
Madison.....	10	1	2	-----	-----	4	1	-----
Milwaukee.....	48	14	1	4	4	294	21	18
Racine.....	16	3	0	-----	0	45	88	1
Superior.....	12	0	0	-----	0	0	12	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	5	0	0	-----	2	0	0	3
Minneapolis.....	20	12	7	-----	1	4	19	14
St. Paul.....	4	5	0	2	2	1	16	6
Iowa:								
Davenport.....	2	0	0	-----	-----	0	0	-----
Des Moines.....	0	1	2	-----	-----	0	0	-----
Sioux City.....	2	1	0	-----	-----	1	0	-----
Waterloo.....	4	0	0	-----	-----	0	1	-----
Missouri:								
Kansas City.....	16	6	6	-----	0	3	0	16
St. Joseph.....	5	1	5	-----	0	0	0	6
St. Louis.....	46	37	10	3	-----	2	7	13
North Dakota:								
Fargo.....	1	0	0	-----	0	14	0	1
South Dakota:								
Aberdeen.....	0	0	0	-----	-----	14	0	-----
Nebraska:								
Omaha.....	4	4	8	-----	0	1	6	8
Kansas:								
Topeka.....	22	1	1	3	0	0	6	1
Wichita.....	11	1	2	-----	0	61	0	6
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	2	0	-----	0	0	0	6
Maryland:								
Baltimore.....	121	19	11	119	8	1	141	35
Cumberland.....	0	1	0	6	0	4	0	3
Frederick.....	0	0	1	-----	0	1	0	2
District of Columbia								
Washington.....	46	13	8	14	6	1	0	21
Virginia:								
Lynchburg.....	5	2	0	-----	0	0	0	1
Norfolk.....	0	1	1	-----	0	1	0	6
Richmond.....	9	3	1	-----	1	0	0	7
Roanoke.....	6	1	1	-----	0	0	0	3
West Virginia:								
Charleston.....	7	0	0	11	0	95	0	5
Huntington.....	3	-----	0	-----	-----	3	0	-----
Wheeling.....	0	1	0	-----	3	1	0	6
North Carolina:								
Raleigh.....	5	0	0	-----	0	38	0	2
Wilmington.....	1	0	0	-----	0	0	0	3
Winston-Salem.....	11	1	1	-----	0	1	5	4
South Carolina:								
Charleston.....	5	0	1	70	0	0	0	2
Columbia.....	2	0	0	-----	0	1	0	1
Greenville.....	0	0	0	-----	-----	0	0	-----
Georgia:								
Atlanta.....	4	3	1	15	1	3	0	11
Brunswick.....	3	0	0	-----	1	0	0	0
Savannah.....	3	0	2	4	0	0	0	2
Florida:								
Miami.....	0	2	2	1	0	1	0	0
Tampa.....	1	1	3	-----	0	0	1	0

## City reports for week ended March 12, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	1	0	0	0	0
Lexington.....	4		1	4	0	0	10	5
Tennessee:								
Memphis.....	6	3	2	2	8	0	0	9
Nashville.....	1	1	5	1	0	0	0	6
Alabama:								
Birmingham.....	1	2	1	6	0	1	5	10
Mobile.....	0	0	0	0	0	0	0	4
Montgomery.....	2	1	0		1	3		
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....		0						
Little Rock.....	2	0	0	0	0	11	5	
Louisiana:								
New Orleans.....	0	13	21	2	1	0	0	10
Shreveport.....	3	0	2		0	28	3	2
Oklahoma:								
Muskogee.....	0		0	56	0	14	2	0
Texas:								
Dallas.....	8	6	8	29	2		0	12
Fort Worth.....	21	4	2	2	0	0	0	8
Galveston.....	0	1	1	0	0	0	0	0
Houston.....	4	5	9	0	2	0	0	5
San Antonio.....	0	3	0		8	6	0	10
MOUNTAIN								
Montana:								
Billings.....	1	0	0	0	2	0	0	0
Great Falls.....	5	0	0	1	1	0	0	1
Helena.....	1	0	0	0	3	0	0	0
Missoula.....	0	0	0	50	0	0	0	1
Idaho:								
Boise.....	0	0	0	0	0	0	0	1
Colorado:								
Denver.....	16	8	3	2	49	62	19	
Pueblo.....	32	0	0	0	1	0	0	
New Mexico:								
Albuquerque.....	1	0	0	0	89	7	2	
Arizona:								
Phoenix.....	0		0	0	0	0	2	
Utah:								
Salt Lake City.....	32	2	0	0	0	1	2	
Nevada:								
Reno.....	0	1	0	0	3	0	0	
PACIFIC								
Washington:								
Seattle.....	26	4	0		393	8		
Spokane.....	7	1	2		0	0		
Tacoma.....	24	1	0	0	23	0	5	
Oregon:								
Portland.....	16	6	1	2	36	13	10	
California:								
Los Angeles.....	167	34	20	100	3	7	5	19
Sacramento.....	38	1	0		0	108	0	16
San Francisco.....	92	12	1	4	0	102	12	11

## City reports for week ended March 12, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	4	2	0	0	0	1	0	0	0	8	35
New Hampshire:											
Concord .....	1	0	0	0	0	0	0	0	0	0	8
Manchester .....	2	10	0	0	0	0	0	0	0	0	10
Nashua .....	0	3	0	0	0	0	0	0	0	0	
Vermont:											
Barre .....	0	0	0	0	0	1	0	0	0	3	7
Burlington .....	0	2		1	0	0	0	0	0	0	14
Massachusetts:											
Boston .....	90	155	0	0	0	12	1	0	0	35	257
Fall River .....	5	4	0	0	0	3	0	0	0	4	22
Springfield .....	10	10	0	0	0	2	0	0	0	4	32
Worcester .....	10	51	0	0	0	0	0	0	0	21	50
Rhode Island:											
Pawtucket .....	4	0	0	0	0	0	0	0	0	0	21
Providence .....	15	32	0	0	0	0	0	0	0	24	70
Connecticut:											
Bridgeport .....	13	9	0	0	0	1	0	0	0	5	37
Hartford .....	8	9	0	0	0	3	0	0	0	13	53
New Haven .....	6	24	0	0	0	0	0	0	0	12	44
MIDDLE ATLANTIC											
New York:											
Buffalo .....	28	133	0	0	0	6	1	0	0	29	169
New York .....	320	1,107	0	0	0	118	7	5	0	127	1,985
Rochester .....	11	102	0	0	0	7	0	0	0	3	94
Syracuse .....	13	27	0	0	0	0	0	0	0	71	52
New Jersey:											
Camden .....	5	46	0	0	0	2	0	0	0	4	52
Newark .....	41	47	0	0	0	12	0	0	0	27	130
Trenton .....	4	7	0	0	0	1	0	0	0	6	55
Pennsylvania:											
Philadelphia .....	97	267	0	0	0	30	1	1	0	251	529
Pittsburgh .....	31	61	0	0	0	14	0	0	0	50	244
Reading .....	5	9	0	0	0	0	0	0	0	20	40
Scranton .....		37		0				0		2	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati .....	29	43	1	0	0	13	0	0	0	14	142
Cleveland .....	59	65	1	0	0	15	1	0	0	164	231
Columbus .....	12	10	1	7	0	3	0	0	1	55	86
Toledo .....	14	4	0	0	0	5	1	0	0	69	87
Indiana:											
Fort Wayne .....	5	5	0	0	0	1	0	0	0	1	39
Indianapolis .....	17	11	8	2	0	1	0	0	0	34	
South Bend .....	2	5	1	0	0	1	0	0	0	0	18
Terre Haute .....	3	3	0	0	0	0	0	0	0	0	13
Illinois:											
Chicago .....	149	191	1	0	1	39	1	1	0	167	708
Springfield .....	3	11	0	0	0	0	0	0	0	9	17
Michigan:											
Detroit .....	129	230	2	0	0	28	0	0	1	75	370
Flint .....	15	8	1	0	0	3	0	0	0	9	37
Grand Rapids .....	12	5	0	0	0	1	0	0	0	1	35
Wisconsin:											
Kenosha .....	4	2	0	0	0	0	0	0	0	1	11
Madison .....	6	3	0	0			0	0		8	
Milwaukee .....	31	53	0	0	0	11	0	0	0	120	129
Racine .....	3	0	0	0	0	0	0	0	0	1	11
Superior .....	3	0	0	0	0	0	0	0	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth .....	9	1	0	0	0	0	0	0	0	0	16
Minneapolis .....	41	42	0	0	0	2	0	0	0	33	122
St. Paul .....	29	12	0	0	0	3	0	0	0	9	62

## City reports for week ended March 12, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all cases
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport.....	3	4	2	0	-----	-----	0	0	-----	0	-----
Des Moines.....	9	15	2	0	-----	-----	0	0	-----	0	30
Sioux City.....	1	1	0	0	-----	-----	0	0	-----	0	4
Waterloo.....	2	0	0	0	-----	-----	0	0	-----	0	5
Missouri:											
Kansas City.....	27	15	0	0	0	4	0	0	0	24	115
St. Joseph.....	3	0	0	0	0	3	0	0	0	3	46
St. Louis.....	42	21	3	0	0	15	1	1	0	59	226
North Dakota:											
Fargo.....	3	1	0	0	0	0	0	0	0	0	7
South Dakota:											
Aberdeen.....	0	0	0	0	-----	-----	0	0	-----	1	-----
Nebraska:											
Omaha.....	6	1	4	6	0	0	0	0	0	1	57
Kansas:											
Topeka.....	3	0	1	0	0	0	0	0	0	11	15
Wichita.....	4	0	0	0	0	1	0	0	0	0	38
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	6	0	0	0	3	0	1	0	6	35
Maryland:											
Baltimore.....	41	92	0	0	0	16	1	0	0	77	238
Cumberland.....	1	2	0	0	0	0	0	0	0	7	11
Frederick.....	0	2	0	0	0	0	0	0	0	0	5
District of Colum- bia:											
Washington.....	28	24	1	0	0	17	0	3	0	21	172
Virginia:											
Lynchburg.....	0	2	0	0	0	1	0	0	0	18	10
Norfolk.....	1	5	0	0	0	2	0	0	0	7	-----
Richmond.....	4	12	0	0	0	3	0	0	0	7	51
Roanoke.....	1	1	0	0	0	2	0	0	0	0	19
West Virginia:											
Charleston.....	1	2	0	0	0	0	0	1	1	4	25
Huntington.....	-----	0	-----	0	-----	-----	-----	0	-----	0	-----
Wheeling.....	1	0	0	0	0	0	1	0	0	5	27
North Carolina:											
Raleigh.....	0	1	0	0	0	1	0	0	0	3	11
Wilmington.....	0	0	0	0	0	0	0	0	0	11	14
Winston-Salem.....	1	20	0	0	0	0	0	0	0	39	15
South Carolina:											
Charleston.....	1	0	0	0	0	2	0	1	0	0	21
Columbia.....	0	2	0	0	0	2	0	0	0	3	18
Greenville.....	-----	3	1	0	-----	-----	-----	0	-----	0	-----
Georgia:											
Atlanta.....	6	1	1	0	0	5	0	1	1	2	70
Brunswick.....	0	0	0	0	0	1	0	0	0	0	3
Savannah.....	1	0	0	0	0	4	0	2	1	6	36
Florida:											
Miami.....	1	0	1	0	0	5	0	0	0	2	24
Tampa.....	0	0	0	0	0	2	1	0	0	0	38
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	4	0	0	0	0	2	0	0	0	0	28
Lexington.....	-----	5	-----	0	0	2	-----	0	0	8	12
Tennessee:											
Memphis.....	12	7	2	5	0	9	1	1	0	16	74
Nashville.....	3	2	0	0	0	2	0	0	0	10	55
Alabama:											
Birmingham.....	3	4	1	0	0	5	0	0	0	18	66
Mobile.....	0	1	0	3	0	1	0	0	0	0	26
Montgomery.....	0	0	0	0	-----	-----	-----	0	-----	0	-----

14 cases nonresidents.

## City reports for week ended March 12, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expec- tancy	Cases re- ported	Cases, esti- mated expec- tancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expec- tancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0		0				0				
Little Rock.....	2	1	0	0	0	6	0	0	0	10	13
Louisiana:											
New Orleans.....	11	8	0	0	0	12	2	1	1	1	159
Shreveport.....	1	1	1	0	0	9	0	0	0	4	37
Oklahoma:											
Muskogee.....		3		1				0		0	
Texas:											
Dallas.....	6	6	1	0	0	3	0	0	0	2	54
Fort Worth.....	2	5	2	17	0	0	0	0	0	0	28
Galveston.....	0	1	0	0	0	1	0	1	0	0	20
Houston.....	2	7	3	0	0	3	0	1	0	0	65
San Antonio.....	1	0	0	0	0	8	0	0	0	0	81
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	1	0	0	14
Great Falls.....	3	1	0	0	0	9	0	0	0	1	9
Helena.....	0	0	0	0	0	0	0	0	0	0	7
Missoula.....	0	0	0	0	0	0	0	0	0	0	6
Idaho:											
Boise.....	0	2	1	2	0	0	0	0	0	0	6
Colorado:											
Denver.....	17	16	0	0	0	3	0	0	0	5	81
Pueblo.....	1	0	0	0	0	0	0	0	0	4	7
New Mexico:											
Albuquerque.....	0	0	0	0	0	4	0	0	0	0	13
Arizona:											
Phoenix.....	1	1	0	0	0	1	0	0	0	0	
Utah:											
Salt Lake City.....	3	0	0	0	0	3	0	0	0	0	36
Nevada:											
Reno.....	0	1	0	0	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle.....	11	5	3	0			0	0		5	
Spokane.....	7	1	9	0			0	0		0	
Tacoma.....	3	4	3	0	0	0	1	0	0	1	17
Oregon:											
Portland.....	6	1	13	9	0	3	1	0	0	7	77
California:											
Los Angeles.....	44	53	4	0	0	20	1	0	0	28	258
Sacramento.....	3	0	1	0	0	3	1	4	0	0	
San Francisco.....	27	8	1	7	0	18	1	0	0	12	187

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston.....	0	1	0	0	0	0	0	1	1
Connecticut:									
Bridgeport.....	0	0	1	0	0	0	0	0	0
Hartford.....	0	0	1	0	0	0	0	0	0



## City reports for week ended March 12, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York.....	5	6	0	0	0	0	0	0	0
New Jersey:									
Newark.....	1	0	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	1	1	1	0	0	0	0	0	0
Pittsburgh.....	1	0	0	0	0	0	1	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	0	1	0	0	0	0	0	0	0
Cleveland.....	2	1	0	1	0	0	0	0	0
Toledo.....	0	0	1	1	0	0	0	0	0
Indiana:									
Indianapolis.....	9	8	0	0	0	0	0	0	0
Illinois:									
Chicago.....	7	5	0	0	0	0	0	0	0
Michigan:									
Detroit.....	3	2	0	0	0	0	1	0	0
Flint.....	1	0	0	0	0	0	0	0	0
Wisconsin:									
Racine.....	1	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Missouri:									
Kansas City.....	0	1	0	0	0	0	0	0	0
St. Louis.....	0	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	2	0	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	3	0	0	0	0	0	0	0	0
West Virginia:									
Wheeling.....	0	0	0	1	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta.....	3	1	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	1	1	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham.....	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	0	0
Louisiana:									
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas: <sup>1</sup>									
Fort Worth.....	0	0	0	0	0	1	0	0	0
Houston.....	0	0	0	1	0	0	0	0	0
PACIFIC									
Oregon:									
Portland.....	0	0	0	1	0	0	0	0	0
California:									
Los Angeles.....	1	0	0	0	0	0	0	1	1
Sacramento.....	1	0	0	0	0	0	0	0	0

<sup>1</sup> Rabies (in man), 1 case and 1 death at San Antonio, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended March 12, 1932, compared with those for a like period ended March 14, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, February 7 to March 12, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931
98 cities.....	78	67	72	68	64	70	62	73	<sup>2</sup> 50	65
New England.....	65	75	108	70	65	69	48	106	53	79
Middle Atlantic.....	75	53	65	64	72	56	63	61	56	67
East North Central.....	74	85	57	66	45	78	66	75	54	72
West North Central.....	89	55	85	59	66	55	49	71	74	63
South Atlantic.....	69	69	88	47	69	77	78	93	59	53
East South Central.....	87	53	75	59	46	59	35	29	40	35
West South Central.....	168	118	158	186	119	132	102	118	<sup>2</sup> 138	68
Mountain.....	103	78	52	35	9	87	9	61	26	26
Pacific.....	63	49	47	59	67	57	57	63	44	55

## MEASLES CASE RATES

98 cities.....	438	521	533	608	571	703	698	769	<sup>2</sup> 672	947
New England.....	2,008	534	1,589	541	1,510	635	1,740	909	901	1,346
Middle Atlantic.....	253	398	384	652	466	645	504	874	644	1,026
East North Central.....	364	183	577	254	590	300	919	369	936	582
West North Central.....	182	1,314	197	1,067	226	874	241	643	165	595
South Atlantic.....	245	1,820	359	2,206	282	2,805	424	2,241	286	2,758
East South Central.....	17	904	12	1,134	0	1,051	17	1,045	58	1,157
West South Central.....	320	17	251	24	234	24	257	68	<sup>2</sup> 101	37
Mountain.....	198	687	138	1,566	250	1,210	198	1,331	509	1,462
Pacific.....	931	169	1,125	243	1,296	223	1,313	347	1,205	357

## SCARLET FEVER CASE RATES

98 cities.....	385	348	417	346	441	373	475	345	<sup>2</sup> 482	375
New England.....	630	683	738	589	673	606	666	527	709	589
Middle Atlantic.....	546	322	631	342	694	381	777	359	799	389
East North Central.....	385	375	356	353	372	364	382	346	382	399
West North Central.....	285	474	241	497	248	509	231	492	178	518
South Atlantic.....	289	320	231	305	284	364	312	354	327	311
East South Central.....	127	382	75	534	121	558	87	405	81	482
West South Central.....	49	105	86	139	56	125	66	71	<sup>2</sup> 81	95
Mountain.....	172	400	267	296	172	305	155	305	172	400
Pacific.....	109	123	128	94	124	145	158	122	135	96

See footnotes at end of table.

Summary of weekly reports from cities, February 7 to March 12, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Feb. 13, 1932	Feb. 14, 1931	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931
98 cities.....	4	18	4	20	4	20	4	13	* 5	19
New England.....	2	0	5	0	5	0	10	0	0	0
Middle Atlantic.....	0	0	0	3	1	0	0	0	0	0
East North Central.....	1	10	1	13	1	11	7	15	5	9
West North Central.....	11	84	13	128	19	128	6	57	11	132
South Atlantic.....	0	0	0	2	0	0	6	0	0	0
East South Central.....	6	12	29	18	17	23	17	23	46	0
West South Central.....	20	132	7	51	7	64	7	47	* 0	61
Mountain.....	17	0	0	44	0	9	0	17	17	17
Pacific.....	17	29	21	22	13	39	4	12	13	41

## TYPHOID FEVER CASE RATES

	6	3	3	4	5	7	6	4	* 5	3
98 cities.....	6	3	3	4	5	7	6	4	* 5	3
New England.....	2	2	0	0	2	5	5	5	0	0
Middle Atlantic.....	3	2	4	3	4	6	4	3	3	2
East North Central.....	2	1	3	0	4	3	6	1	1	2
West North Central.....	9	2	0	4	2	11	0	11	2	0
South Atlantic.....	16	0	10	10	16	22	20	12	25	6
East South Central.....	58	29	6	0	12	6	17	18	6	13
West South Central.....	3	14	3	7	7	14	16	0	* 10	14
Mountain.....	0	0	0	9	0	0	0	0	9	0
Pacific.....	10	10	2	12	6	4	0	2	8	4

## INFLUENZA DEATH RATES

	17	59	20	60	34	59	37	44	27	* 24
91 cities.....	17	59	20	60	34	59	37	44	27	* 24
New England.....	17	46	7	43	14	24	17	19	19	26
Middle Atlantic.....	13	49	13	42	39	40	42	32	47	23
East North Central.....	15	56	18	61	37	61	41	46	39	28
West North Central.....	26	56	40	68	29	74	32	50	15	60
South Atlantic.....	18	119	18	123	31	70	33	73	39	57
East South Central.....	44	64	25	140	44	76	13	140	25	102
West South Central.....	44	159	50	97	24	45	71	52	37	55
Mountain.....	60	17	78	61	69	17	34	44	26	35
Pacific.....	7	14	14	26	14	41	12	34	7	36

## PNEUMONIA DEATH RATES

	133	218	154	218	157	212	189	194	193	191
91 cities.....	133	218	154	218	157	212	189	194	193	191
New England.....	117	291	120	276	192	236	192	185	194	147
Middle Atlantic.....	124	254	162	286	184	217	221	229	250	214
East North Central.....	106	182	133	187	110	182	158	154	131	139
West North Central.....	244	124	285	147	244	216	241	218	215	189
South Atlantic.....	174	348	163	340	173	313	196	265	224	332
East South Central.....	182	166	144	267	138	274	189	229	182	242
West South Central.....	121	176	165	228	108	221	172	149	148	211
Mountain.....	172	183	198	200	224	191	196	181	297	285
Pacific.....	137	72	91	70	104	91	102	101	118	125

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Fort Smith, Ark., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended March 5, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended March 5, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....						
Nova Scotia.....		58				
New Brunswick <sup>1</sup> .....						
Quebec.....					8	18
Ontario.....		103	2	1	1	1
Manitoba.....	1			1		1
Saskatchewan.....					7	1
Alberta.....						2
British Columbia.....					3	3
Total.....	1	161	2	2	19	26

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended March 5, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended March 5, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	102	Measles.....	457
Diphtheria.....	31	Scarlet fever.....	78
Erysipelas.....	12	Smallpox.....	8
German measles.....	27	Typhoid fever.....	18
Gonorrhea.....	5	Whooping cough.....	52

*Quebec Province <sup>1</sup>—Deaths from certain diseases—Year 1930.*—During the year 1930 deaths from certain diseases were reported in the Province of Quebec, Canada, as follows:

Disease	Deaths	Disease	Deaths
Bronchitis.....	159	Measles.....	273
Cancer.....	2,346	Mumps.....	29
Cerebrospinal meningitis.....	104	Pneumonia.....	1,172
Chicken pox.....	5	Poliomyelitis.....	24
Diabetes.....	308	Scarlet fever.....	311
Diphtheria.....	610	Smallpox.....	172
Dysentery.....	63	Syphilis.....	195
Erysipelas.....	57	Tetanus.....	6
German measles.....	1	Tuberculosis.....	3,350
Influenza.....	406	Typhoid and paratyphoid fever.....	258
Lethargic encephalitis.....	2	Whooping cough.....	410

<sup>1</sup> Other vital statistics for the Province of Quebec, Canada, will be found in the Public Health Reports Mar. 11, 1932, pp. 634, 635.

**Saskatchewan—Vital statistics.**—According to information published by the Department of Public Health of the Province of Saskatchewan, Canada, births and deaths were reported in the Province, in 1930, as follows:

Number of births.....	22,051	Number of deaths.....	6,309
Birth rate per 1,000 population.....	25.0	Death rate per 1,000 population.....	7.2
Number of stillbirths.....	547	Deaths under 1 year per 1,000 live births.....	72.6

Estimated population of the Province, 1930: 882,000

Cases of certain diseases, with deaths and death rates per 100,000 population, were reported during 1930 in the Province of Saskatchewan, as follows:

Disease	Cases	Deaths	Death rate per 100,000 population	Disease	Cases	Deaths	Death rate per 100,000 population
Cerebrospinal meningitis.....		25	2.8	Pneumonia.....		354	40.1
Chicken pox.....	1,575	1	0.1	Scabies.....	121		
Diphtheria.....	300	69	7.8	Scarlet fever.....	683	10	1.1
Dysentery (bacillary).....	25	29	3.2	Septicæmia.....		19	2.2
Erysipelas.....	28	18	2.0	Smallpox.....	375		
German measles.....	111			Syphilis.....		17	1.9
Influenza.....		158	17.9	Tetanus.....		3	0.3
Leprosy.....	1			Trachoma.....	2		
Lethargic encephalitis.....	2	5	0.6	Tuberculosis.....		407	46.1
Measles.....	1,249	18		Typhoid fever.....	98	29	3.3
Mumps.....	427	2	0.2	Undulant fever.....	1		
Poliomyelitis.....	70	21	2.4	Whooping cough.....	689	54	6.1

### DENMARK

**Communicable diseases—November, 1931.**—During the month of November, 1931, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	3	Paratyphoid fever.....	73
Chicken pox.....	20	Poliomyelitis.....	6
Diphtheria and croup.....	345	Puerperal fever.....	21
Erysipelas.....	268	Scabies.....	1,018
German measles.....	2	Scarlet fever.....	256
Gonorrhœa.....	880	Syphilis.....	97
Influenza.....	4,601	Tetanus.....	3
Lethargic encephalitis.....	9	Typhoid fever.....	23
Measles.....	1,670	Undulant fever (Bact. abort. Bang).....	37
Mumps.....	152	Whooping cough.....	2,410

### IRISH FREE STATE

**Vital statistics—Year 1930.**—The following vital statistics for the year 1930 are taken from a report of the registrar general for that year:

Population, estimated.....	2,946,000	Infant mortality rate.....	68
Births.....	58,353	Deaths from—	
Birth rate per 1,000 population.....	19.8	Cancer.....	3,329
Deaths.....	41,702	Tuberculosis.....	3,825
Death rate per 1,000 population.....	14.2	Rate per 1,000 population.....	1.3
Marriage rate per 1,000 population.....	4.6		

## ITALY

*Communicable diseases—Four weeks ended November 15, 1931.*—During the four weeks ended November 15, 1931, cases of certain communicable diseases were reported in Italy as follows:

Disease	Oct. 19-25		Oct. 26-Nov. 1		Nov. 2-8		Nov. 9-15	
	Cases	Com-munes af-fected	Cases	Com-munes af-fected	Cases	Com-munes af-fected	Cases	Com-munes af-fected
Anthrax.....	38	35	32	28	26	22	25	24
Cerebrospinal meningitis.....	14	14	6	6	8	7	8	8
Chicken pox.....	131	68	168	79	199	76	298	106
Diphtheria and croup.....	586	307	589	311	533	287	686	359
Dysentery.....	11	7	7	3	26	12	12	8
Lethargic encephalitis.....	1	1	1	1	4	4	—	—
Measles.....	625	145	734	146	816	157	1,057	186
Polio myelitis.....	21	18	19	15	12	7	11	16
Scarlet fever.....	579	219	582	203	523	175	636	203
Typhoid fever.....	601	357	615	323	563	317	746	382

## JAMAICA

*Communicable diseases—Four weeks ended February 27, 1932.*—During the four weeks ended February 27, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica, outside of Kingston, as follows:

Disease	Kings-ton	Other localities	Disease	Kings-ton	Other localities
Chicken pox.....	19	20	Puerperal fever.....	—	1
Dysentery.....	—	2	Tuberculosis.....	34	79
Leprosy.....	—	1	Typhoid fever.....	8	55

## LATVIA

*Communicable diseases—January, 1932.*—During the month of January, 1932, cases of certain communicable diseases were reported in Latvia, as follows:

Disease	Cases	Disease	Cases
Botulism.....	1	Measles.....	26
Cerebrospinal meningitis.....	3	Mumps.....	163
Diphtheria.....	71	Scarlet fever.....	43
Erysipelas.....	26	Trachoma.....	95
Influenza.....	91	Typhoid fever.....	38
Leprosy.....	2	Whooping cough.....	170

## PORTO RICO

*Vital statistics—Year 1930.*—According to information published by the Health Department of Porto Rico, births and deaths were reported on the island during the year 1930, as follows:

Number of births.....	54,574	Number of deaths.....	28,870
Birth rate per 1,000 population.....	35.2	Death rate per 1,000 population.....	18.6
Number of stillbirths.....	5,089	Deaths under 1 year per 1,000 live births.....	126
Stillbirth rate per 1,000 births (including stillbirths).....	85.3	Maternal mortality per 1,000 total births....	5.64

The following table gives the numbers of deaths from certain causes, together with death rates per 100,000 population, in Porto Rico, for the year 1930:

Cause of death	Number of deaths	Death rate per 100,000 population
Arteriosclerosis.....	278	17.9
Bronchitis.....	892	57.5
Broncho-pneumonia.....	1,518	97.9
Cancer.....	559	36.1
Congenital debility.....	1,305	84.2
Diarrhea and enteritis (under 2 years).....	3,022	195.0
Diarrhea and enteritis (2 years and over).....	2,049	132.2
Dysentery.....	102	6.6
Heart disease.....	1,597	103.0
Influenza.....	51	3.2
Malaria.....	1,887	121.7
Meningitis (simple).....	180	11.6
Nephritis.....	2,074	133.8
Pneumonia (all forms).....	1,171	75.5
Puerperal septicemia.....	140	9.6
Septicemia.....	266	17.2
Syphilis.....	211	13.6
Tetanus.....	501	32.3
Tuberculosis (all forms).....	4,060	263.2
Typhoid fever.....	132	8.5
Uncinariasis.....	367	23.7

From medical officers of the Public Health Service, American consuls, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases; D, deaths; P, present]

[illegible]







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE

[C indicates cases; D, deaths; P, present]

Place	Week ended—																		
	Aug. 23- Sept. 19, 1931		Sept. 20- Oct. 17, 1931		Oct. 18- Nov. 14, 1931		Nov. 15- Dec. 12, 1931		January, 1932							February, 1932			Mar. 5, 1932
									December, 1931							February, 1932			
Argentina: Cordoba Province <sup>1</sup> .....	C																		
Atares.....	C																		
San Miguel Island.....	C																		
Tenedra Island.....	C																		
Belgian Congo.....	C																		
British East Africa (see also table below):	C																		
Tanganyika.....	C																		
Uganda.....	D	4	13																
Canary Islands: Palma Island—Los Lunos.....	D	4	5																
	D	289	276	218	145	28	13	9	13	10	14	10							
	D	207	270	211	138	24	15	10	13	14	6								
Ceylon: Colombo.....	D	3	4																
Plague-infected rats.....	D	3	3																
Chile: Santiago.....	C																		
Plague-infected rats.....	D																		
China: Shansi Province <sup>1</sup> .....	C																		
Shensi Province.....	C																		
Dutch East Indies:	C																		
Java—	C																		
Surabaya.....	C																		
Tegal.....	D																		
Java and Madura.....	D	233	325	512	702	179	151	136	121	102	127								
West Java.....	D	65	113	139	198	64	54	39	46	34	48	54							
	D	65	113	139	198	64	54	29	46	34	48	54							









Canton.....	1	P	3	14	6	3	5	4	3	11	5	8	18	6	5	15
Kochow.....			P	29	1	6	34	6	11	22	15	1				
Hankow.....			P	6	1	1	7	3	1		2	2				
Hong Kong.....								1	1		4	6	7	10	19	6
Manchuria—Dairen.....				1							1	4	2	9	9	3
Nanking.....				2								1	1			7
Shanghai—				1												
Foreigners only.....																
Including natives.....																
Szechwan.....	2			77	16	40	18	41	43	45	40	32	48	30	44	45
Tientsin.....				31	8	13	6	14	11	21	17	13	24	18	17	8
Chosen (see table below)				1			2					1				
Columbia:																
Calli.....					1											
Santa Marta.....	1											1				
Dutch East Indies: Batavia.....					1											
Egypt.....																
Cairo.....									1							2
Suez.....	10															3
Eritrea.....	2															
France (see table below)										1						
Germany: Aix-la-Chapelle.....																
Great Britain:																
England and Wales.....	97			216	44	32	54	68	68	55	55	49	70	73	73	42
London.....	22			118	18	14	26	40	24	36	22	18	44	38	32	22
London and Great Towns.....	88			191	31	22	45	56	60	45	37	46	59	57	83	34
Honduras:																
Celiba.....	14			1			1	1			1			1		1
Puerto Castilla.....	1			8												
Tecucigalpa.....																
Trujillo.....	1															
India:	1,705			2,266	362	426	619	954	705							
Basselin.....	433			1,096	84	96	110	174	180							
Bombay.....	8			1	2			1	3	1	3	2	3	2	5	13
Calcutta.....	5			1	1		1	6	7	3	2	1	9	2	1	6
Cochin.....	5			1		1	1	1	3	1	3	10	6	25	35	33
Karachi.....	5			1		1	1	1	1	2	3	8	1	7	18	23
Madras.....	1			5	2	1		1	2	2	12	2	9	11	3	3
Moulmein.....	1			7	1	2	3	1	1	2	3	2	4	2	2	7
	2			2		1	1			2	1	3		3		2

1 23 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 18, 1932.

1 600 cases of smallpox with 15 deaths were reported in Honduras from July, 1931, to Feb. 16, 1932.





Place	Aug- ust, 1931	Sep- tem- ber, 1931	November, 1931			December, 1931			January, 1932			February, 1932		
			1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-31
Monterrey.....	2	1	2	7		1	2	1	1	2	1	2	5	1
San Luis Potosi.....	1					2	1	2	1	3	1	2	1	2
Turcom.....													2	
Macocco (see table below)														
Netherlands: Friesland-Opsterland														
Nigeria.....														
Panama: Chiriqui.....														
Poland.....														
Portugal.....														
Lisbon.....	66	48	78	91	35	14	26	33	38	22	31	7	21	5
Opporto.....				2	1			1	2			1	4	1
Rumania (see table below)													17	7
Siama.....	3							5	1			1	1	8
Straits Settlements.....														
Sudan (Anglo-Egyptian).....	32			2		2		2					3	2
Sweden: Malmo.....	6												6	1
Syria (see table below)														
Tunisia.....								1					1	
Union of South Africa.....														
Cape Province.....														
Natal.....	P	P	P	P	P	P	P	P						
Orange Free State.....	P	P	P	P	P									
Transvaal.....														
On vessels.....														
Brazilian ship Jeboetao at New Orleans from Brazil														
S. S. Tacoma at Manila from Shanghai														
S. S. C. G. at Yokohama from Shanghai														
S. S. C. G. at Yokohama from Shanghai														
S. S. Bellingham at Yokohama from Shanghai														
S. S. Victoria City at Yokohama from Shanghai														
S. S. Bellasco at Yokohama from Shanghai														
S. S. Bellasco at Mobile from Havana, Cuba, and														
S. S. Hull, England.....														
S. S. Frevilla at Suez.....														
S. S. Uwajima Maru at Osaka from Shanghai														
Indo-China (see also table above).....	72	39	47	20	2	98	144	41	324	11	107	191	145	208
Ivory Coast.....	26	13	16	4		18	17	21	65	11	53	85	47	98
Syria: Beirut.....	4			1										

\* Imported case.





**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

**TYPHUS FEVER--Continued**

[C indicates cases; D, deaths; P, present]

[illegible]

## YELLOW FEVER

[illegible]





**UNITED STATES TREASURY DEPARTMENT**

# **PUBLIC HEALTH REPORTS**

**ISSUED WEEKLY**

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**VOLUME 47    ::    ::    NUMBER 15**

**APRIL 8 - - - - - 1932**

## **===== SPECIAL ARTICLES =====**

**Comparison of Smallpox Trend in Different Countries  
Typhoid Fever in Urban and Rural Areas of Tennessee**



**UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932**



## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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# PUBLIC HEALTH REPORTS

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## TREND OF SMALLPOX INCIDENCE IN CIVILIZED COUNTRIES

An unparalleled reduction in the incidence of smallpox in most European countries since 1920 is indicated in reports received by the League of Nations.<sup>1</sup> Some of the reduction may be due to the classification of smallpox cases as alastrim, but as a whole the decline appears to be real.

A remarkable contrast is offered when we compare the United States and England with Continental Europe. In 1930, 46,712 cases of smallpox were reported in the United States, 11,839 in England and Wales, and 268 in Continental Europe (exclusive of Spain, Portugal, Greece, and Russia). Of these cases, 217 were reported from France. The League of Nations publishes a graph of reported prevalence in Europe, which is reproduced in Figure 1, together with the curve for the United States. The report makes the following comment: "The efficacy of smallpox vaccination in preventing and limiting smallpox outbreaks is clearly shown by the progressive decline or even the eradication of smallpox in countries of central and eastern Europe where vaccination has become general, while the disease still persists, or even spreads, in England and the United States, where vaccination is not in fact universally compulsory."

Great variability in the case fatality of the disease in different countries is noted; and there also seems to be a certain decrease in this fatality during the period under consideration.

The numbers of cases of smallpox reported in different countries during the period 1920-1930 are given in the accompanying table.

A number of countries (for instance India, Africa, China, South America) were omitted from this table because data as to reported cases were not available or were available for part of the period only. Omission of British India is particularly important. Reported cases of smallpox for that country can be secured from 1926 on, and are as follows: 1926, 221,156; 1927, 213,315; 1928, 181,864; 1929, 148,199; 1930, 215,204. The last two figures are provisional. The serious-

<sup>1</sup> Monthly Epidemiological Report, October, 1931.

ness of the smallpox problem in India is indicated by the fact that 48,860 deaths were reported from this cause in British India in 1930, as compared with about 600 from all other countries for which information as to mortality was available.

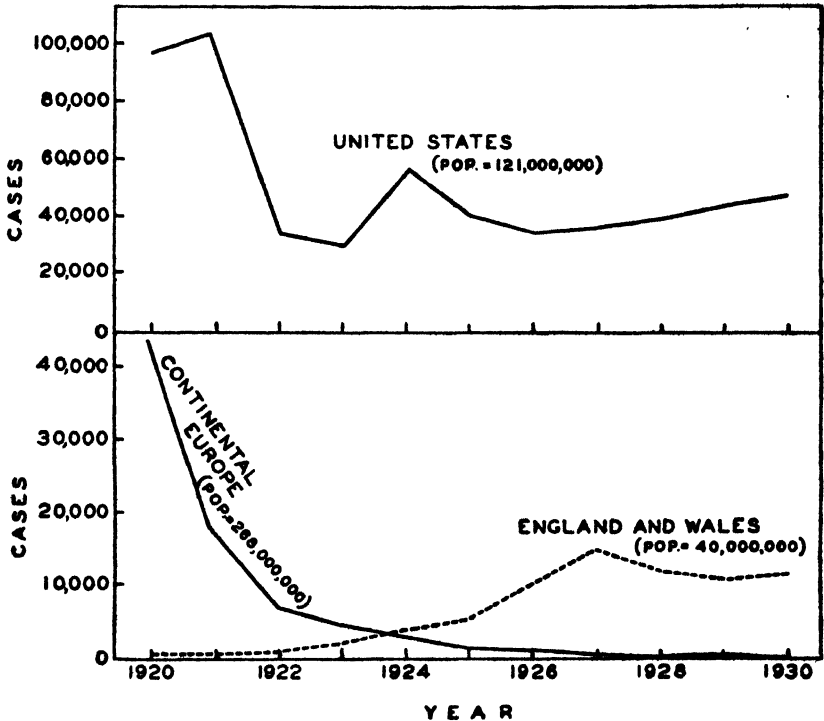


FIGURE 1.—Graphs representing the numbers of cases of smallpox reported in Continental Europe, England and Wales, and the United States, 1920-1930, showing the trend of the disease in those countries. (Continental Europe is exclusive of Spain, Portugal, Greece, and Russia)

TABLE 1.—Trend of smallpox (reported cases) in certain countries during the years 1920-1930

Country	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
EUROPE											
Germany.....	2,042	668	215	17	16	24	7	4	2	1	2
England and Wales.....	280	336	973	2,504	3,797	5,365	10,146	14,767	12,420	10,068	11,639
Austria.....	253	18	4	7	0	0	0	0	0	0	0
Belgium.....	91	21	23	31	31	19	14	18	8	0	0
Bulgaria.....	527	22	24	20	5	0	1	2	0	0	0
Denmark.....	0	7	0	0	25	0	0	0	0	0	0
Scotland.....	725	106	7	3	4	2	1	154	146	18	11
Estonia.....	435	136	50	13	4	5	6	9	3	0	0
Finland.....	77	27	81	12	1	2	1	0	2	1	1
France.....	392	341	172	195	210	456	554	410	153	84	217
Italy.....	26,453	4,644	534	496	432	195	112	60	82	8	2
Latvia.....	422	255	180	23	25	17	11	7	10	0	0
Lithuania.....	1,213	1,038	345	25	58	22	11	7	10	8	4
Malta.....	16	0	1	0	0	84	20	0	1	0	0
Norway.....	0	2	0	0	0	1	0	2	0	0	0
Netherlands.....	50	1	0	2	3	2	15	0	0	703	2
Poland.....	3,948	5,078	2,399	502	861	77	69	30	23	12	21
Rumania.....	3,467	2,744	865	89	9	28	6	4	10	4	5
Sweden.....	11	2	1	0	1	0	1	0	0	0	1

TABLE 1.—*Trend of smallpox (reported cases) in certain countries during the years 1920-1930—Continued*

Country	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
<b>EUROPE—continued</b>											
Switzerland.....	2	596	1,153	2,126	1,234	329	54	0	1	0	1
Union of Socialist Soviet Republics:											
Ukraine.....	34,730	28,123	11,095	3,710	1,188	501	277	168	116	55	—
Other territories in Europe.....	121,587	68,503	40,839	31,311	21,143	11,283	10,622	10,693	7,301	4,330	3,690
Yugoslavia.....	4,156	2,119	728	1,042	330	14	4	3	0	0	1
Total European countries.....	200,877	114,804	59,679	42,127	29,377	18,426	21,932	26,334	20,258	16,189	15,797
<b>AFRICA</b>											
Egypt.....	3,004	92	205	519	799	762	2,676	240	20	26	14
<b>AMERICA</b>											
United States.....	96,684	102,787	32,900	29,968	56,488	38,877	33,392	36,709	38,432	42,282	46,712
<b>ASIA</b>											
Ceylon.....	126	18	337	240	45	28	65	27	18	7	41
Chosen.....	11,532	8,316	3,676	3,722	439	699	1,010	627	290	523	1,419
Netherland East Indies.....	2,400	1,445	1,236	4,922	5,941	4,634	843	297	146	271	310
Japan.....	3,167	889	679	1,922	1,703	430	1,256	352	723	114	7
Siam.....	85	404	472	1,451	588	287	1,113	418	125	405	56
<b>AUSTRALASIA</b>											
New Zealand.....	95	0	0	0	0	1	0	0	0	0	0
Countries outside Europe.....	117,093	113,951	39,405	42,744	66,003	45,742	40,355	38,670	39,754	43,628	48,559
Grand total.....	317,970	228,755	99,084	84,871	95,380	64,168	62,287	65,004	60,012	59,817	64,356

## RELATIVE INCIDENCE OF TYPHOID FEVER IN URBAN AND RURAL AREAS OF TENNESSEE<sup>1</sup>

By D. F. MILAM, M. D., *Acting Director, Division of Preventable Diseases*, and ELBRIDGE SIRLEY, Ph. D., *Statistician, Tennessee Department of Public Health*

Some years ago Leach and Maxcy studied the relative incidence of typhoid fever in population units of various sizes in Alabama.<sup>2</sup> It was brought out that in Alabama the very lowest case and death rates occurred in the country and unincorporated towns; the highest rates occurred in towns of 500 to 1,000 population, with progressively lower rates in towns in each of the larger population groups. These findings fitted in with the idea that in the small town "communal living is most primitive and sanitary safeguards are least in evidence."

In Tennessee it has been observed for many years that typhoid fever is state-wide in its distribution and that epidemics of water-borne typhoid fever in cities and towns are comparatively rare. Central water supplies in this State are numerous and, with few exceptions, are of good quality. On the other hand, it is well known that the disposal of excreta is in a far from satisfactory status, not only in the small towns but also in the outlying sections of many if not most of the cities. Certainly among the rural homes of many counties, even those with full-time health departments, the average level of environmental sanitation is not high.

In the light of these facts it seemed worth while to test the hypothesis that typhoid fever is most prevalent in the small towns in Tennessee

<sup>1</sup> Read before the Fifth Annual Conference of Tennessee Public Health Workers, Nashville, Jan. 20, 1932.

<sup>2</sup> Public Health Reports, 41: 705, ff., Apr. 16, 1926.

by a careful study of the available records. Death records seem to offer the most trustworthy source of information. Morbidity records in Tennessee have been greatly improved in recent years and since 1926 have been very informative; but since the fatality rate in reported cases of typhoid fever in Tennessee is nearly 20 per cent, it is believed that not more than one-half the actual cases are reported, and the distribution of these reported cases might be such as to mask the true picture with regard to the localities where typhoid fever is occurring. Our case reports omit the address of patient in many instances, and information of the type here wanted is not obtainable from them.

For these reasons it was decided to base the investigation on death records alone. Reported deaths from typhoid fever in Tennessee in the three years 1928, 1929, and 1930 numbered, respectively, 346, 307, and 319. Prior to 1928 there were nearer 600 yearly. It was decided to limit the present study to the three years 1928-1930, inclusive. In going over the death certificates it was found that the information given on about half of them did not definitely indicate whether or not the decedent lived within an incorporated town. In many instances it was not evident whether the death took place in a rural area, in an unincorporated town, or in the suburbs outside the city limits of an incorporated city. In the larger cities many decedents from typhoid fever come from neighboring rural areas and are hospitalized in the city after contracting the disease elsewhere. Some allowance for this fact should be made.

It was finally planned to send a questionnaire on each death record considered incomplete for the information desired, and such a questionnaire was sent for every death in a civil district containing an incorporated town or city, unless the death certificate explicitly stated that the decedent did not live in such a town or city. This criterion was responsible for the large proportion of deaths that had to be queried. The questionnaires were sent to the county health officers in counties with full-time health departments, and to local registrars of deaths in the counties without full-time health organizations.

Parenthetically it may be stated that the response was much better from the registrars than from the county health officers. In some cases two follow-up letters were necessary to complete returns. In addition, several explanatory letters had to be sent in regard to certain classes of deaths. In the end, however, the information assembled was considered fairly accurate.

#### FINDINGS

The data assembled are shown in Table 1, the population groups, for easy comparison, being made the same as those used in the Alabama report. The information is tabulated for each year separately and for the three years combined. The chart presents the findings for the three years combined.

Table 1 shows that, after correction for place of residence in the manner already described, the death rate of typhoid fever in Tennessee for the three years 1928-1930 was highest for unincorporated areas and lowest for the largest cities. Among incorporated places of different sizes, the actual data show, in general, a slight increase of the death rate with increasing size of towns, up to the group of 2,500-4,999 population, beyond which the death rate decreases with increasing size of towns and cities. There is an unexpectedly low death rate for towns of 500-999 population.

The 682 deaths assigned to unincorporated areas included the deaths of 47 persons residing in the suburban zones surrounding incorporated cities and towns. The remaining 635 included persons living on farms, in unincorporated villages, in mining and construction camps, etc.—in short, in places where the sanitary environment is not under municipal control. Since suburban areas have no definite boundaries and their population is not on record, it is not possible to make adjustment of the death rate for residents of this class of unincorporated territory; but in any case it is safe to say that the rural death rate is higher than the rate for incorporated places.

Accepting the figures at par value, the conclusions would be reached that typhoid fever in Tennessee is most heavily incident in rural districts; that incorporated towns of less than 1,000 inhabitants occupy a more favorable position than either rural areas or slightly larger towns; that towns of between 1,000 and 10,000 population have nearly as high a resident death rate as the rural areas; and lastly, that typhoid fever is much better controlled in cities of 10,000 and over than in any other class of communities.

TABLE 1.—Typhoid fever deaths and death rates in Tennessee, allocated to usual places of residence of decedents, by size of communities, 1928-1930 (data corrected by special questionnaires)

	Population 1930 census	Death rate per 100,000 population <sup>1</sup>				Number of deaths			
		Mean rate 1928-1930 and its probable error <sup>2</sup>	1930	1929	1928	Total 1928- 1930	1930	1929	1928
The State <sup>3</sup> .....	2,616,556	12.4±0.3	12.4	11.7	13.2	977	324	307	346
Unincorporated areas.....	1,584,182	14.3±.4	15.3	13.3	14.4	682	243	211	228
Incorporated towns and cities, total.....	1,032,374	7.6±.3	5.5	8.2	9.1	236	57	85	94
0-499.....	22,162	10.5±2.7	18.0	9.0	4.5	7	4	2	1
500-999.....	41,666	6.4±1.5	9.6	4.8	4.8	8	4	2	2
1,000-2,499.....	72,008	10.6±1.5	11.1	11.1	9.7	23	8	8	7
2,500-4,999.....	93,574	12.8±1.4	8.5	15.0	15.0	36	8	14	14
5,000-9,999.....	99,184	11.8±1.4	9.1	12.1	14.1	35	9	12	14
10,000-24,999.....	46,091	9.4±1.8	2.2	13.0	13.0	13	1	6	6
25,000 and over.....	657,689	5.8±.4	3.5	6.2	7.6	114	23	41	50
Residents of other States.....						17	8	5	4
Place of residence unknown.....						42	16	6	20
Suburban areas (included in "Un- incorporated").....						47	14	17	16

<sup>1</sup> All rates are based on 1930 census.

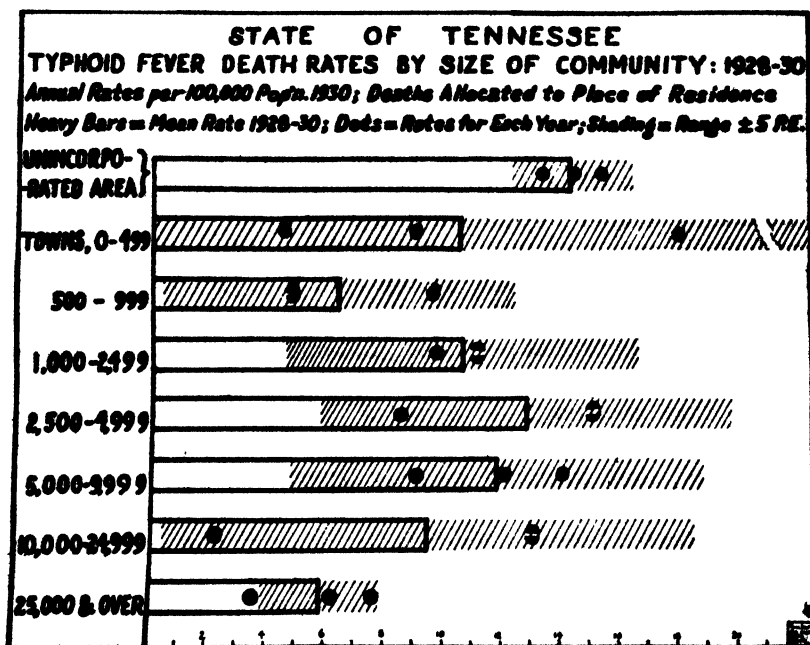
<sup>2</sup> See discussion in text on the meaning of the probable error.

<sup>3</sup> Including nonresidents.



However, the probable error of the death rate<sup>3</sup> for each class of community except the unincorporated area and the cities of over 25,000 is so large as to preclude any positive inferences from slight differences in rates. The probable error, it may be explained, indicates only the unreliability of the death rate which arises from the limited size of the population. In addition, there may be an imponderable bias due to incompleteness or inaccuracy of death registration.

Taking into account the rather wide limits of accuracy of the actual



Typhoid fever death rates in Tennessee by size of community, 1928-1930.

rates, the final conclusions must be carefully restricted. The following results seem reasonably well established by the present study:

1. The highest mortality from typhoid fever in Tennessee occurs in that part of the population whose environment is not subject to municipal sanitary control.

2. Typhoid fever control is not very effectively practiced in the towns and cities of less than 25,000 population, as indicated by the fact that residents of these places experienced a typhoid fever death rate only slightly lower than that of rural residents and much higher than the death rate of residents of the larger cities.

<sup>3</sup> The probable errors of the mean annual death rates for the 3-year period were computed by the Bernoulli formula:

$$P. E. = \pm \frac{.6745 \sqrt{\frac{\text{deaths} \times \text{survivals}}{\text{population}}}}{3 \times \text{population}}$$

3. The typhoid fever death rate is less than one-half as great in residents of cities of over 25,000 as in residents of unincorporated areas.

4. The data collected do not reveal statistically reliable differences among the typhoid fever death rates for groups of communities ranging from less than 500 to 10,000–24,999 population, although the rate for towns of 2,500–4,999 was actually the highest by a slight margin.

#### DISCUSSION

The present study only partially confirms the belief that the small town is the place where "communal living is most primitive and sanitary safeguards are least in evidence."<sup>4</sup> The definition of a small town would have to be extended, as related to Tennessee, to include places of at least as many as 10,000 inhabitants; and exception must be made for unincorporated areas, to which the description seems to apply in the highest degree. It would seem desirable to try to find out the relative incidence of typhoid fever in suburbs, unincorporated villages, and other kinds of places beyond the scope of municipal governments. There is ample circumstantial evidence for the belief that the less-favored suburbs of cities are places of very high typhoid fever incidence.

Public water supplies, of which there are about 160 in Tennessee, are quite evidently not important means of disseminating typhoid infection. Twelve public water supplies are classified as "unsafe" or "doubtful" in a recent compilation by the division of sanitary engineering of the State health department. During 1928, 1929, and 1930 no resident of the 12 towns having unsatisfactory water supplies was reported to have died from typhoid fever.

Available data on public sewerage systems are not complete enough for correlation with the facts already presented.

TABLE 2.—Typhoid fever deaths in Tennessee, allocated to place named on death certificate, and reallocated after querying for usual place of residence, 1930

	Death rate per 100,000 population *		Number of deaths		Net change (per cent of crude figure)
	Corrected	Crude *	Corrected	Crude *	
The State	12.4	12.4	324	324	0
Unincorporated areas	15.3	11.4	243	180	+35
Incorporated towns and cities, total	5.5	13.6	57	140	-59
0-499	18.0	27.1	4	6	-33
500-999	9.6	50.4	4	21	-81
1,000-2,499	11.1	27.8	8	20	-60
2,500-4,999	8.5	28.9	8	27	-70
5,000-9,999	9.1	20.2	9	20	-55
10,000-24,999	2.2	15.2	1	7	-86
25,000 and over	3.5	5.9	23	39	-41
Residents of other States			8	4	+100
Unknown			16		

\* Based on 1930 census.

<sup>†</sup> See text for exact details of crude and corrected data.

<sup>‡</sup> Including nonresidents.

<sup>§</sup> Leach and Marcy, *loc. cit.*

It may be of interest to record the amount of change brought about by queries as to places of residence of decedents. Table 2 shows for 1930, a comparison of the death rates in the several classes of communities, firstly as compiled from explicit statements on the death certificates, and secondly as corrected by questionnaire returns. In the first instance, death certificates bearing the name of an incorporated town were assigned to that town unless a rural route number was given or the decedent was stated to be a nonresident. The relative errors indicated by the corrected figures are greatest for cities of less than 25,000. Not only is the fact of nonresidence often omitted from death certificates filed in cities, but also there is a rather prevalent habit of recording post-office address rather than actual place of death. Both of these tendencies lead to a spuriously high number of deaths attributed to towns and cities. On the other hand, it was found that in a number of instances the name of the city in which a death occurred was not entered on the certificate, only the civil district number being given. The study has amply demonstrated the fallaciousness of accepting without question the indications as to place of death or place of residence given on death certificates.

### COURT DECISION RELATING TO PUBLIC HEALTH

*Milk law construed.*—(District of Columbia Court of Appeals; *Leaman et al. v. District of Columbia*, 60 Washington Law Reporter 116; decided Jan. 18, 1932.) An act of Congress approved February 27, 1925, provided, among other things, that no person should bring or send into the District of Columbia for sale any milk, cream, or ice cream without a permit so to do from the District health officer. The statute was lengthy, and its purpose, as stated by the court of appeals, "unquestionably was to prevent, through a careful regulation of production conditions, the sale in the District of impure milk and cream." The question presented for decision was whether two articles designated as "Pantry Table Cream" and "Pantry Whipping Cream" could be brought into the District and sold therein without the permit required by the statute. The evidence showed that "Pantry Cream" was sterilized cream sold in hermetically sealed cans. The statute in question defined cream as that portion of milk rich in fat which rise to the surface on standing or is separated from it by centrifugal force, or otherwise, and which contains not less than 20 per cent of butterfat. The evidence showed that the canned product was cream in all respects as that term was defined in the law, and the lower court was of the opinion that the act had been violated, because a literal interpretation brought the product within its terms. But the plaintiffs in error argued that Congress did not intend that

the act should be so construed as to make it applicable to cream which had been sterilized and placed in hermetically sealed cans. In other words, they contended that the process of sterilization plus the canning met all the objects of the statute, and that, therefore, this new method, nonexistent when the law was passed, should not now be considered as within its terms. The court of appeals did not take this view, however, but held that the product in question was within the terms of the statute, saying, in part, as follows:

\* \* \* the boast of plaintiffs in error is that it [the canned product] is pure cream—pure because by sterilization all impurities are destroyed, and cream because it is that portion of the milk, to which nothing is added and from which nothing is taken, that rises to the surface or is otherwise separated, and contains the requisite per centum of butterfat. In its sterilized cans it is still cream, and it is not claimed, and will not be, that anything in the processing has changed its nature or its form. It is, therefore, the precise thing which Congress has said may not be brought into the District or sold there without a permit. To hold differently would be to say that, because the process adopted accomplishes the ends which Congress had in view, the unmistakable language of the statute and its requirements must be ignored. This we may not do, for, if the plain words of the statute leave no room for construction, the courts have no choice but to follow it without regard to the consequences. \* \* \*

It can not, therefore, be claimed that the act, as we construe it, is unreasonable, oppressive, or absurd. The intent, as we have already said, is to protect the public health, and the object is to secure this by control and supervision. If the product by sterilization and sealing meets the requirements of the statute, and this is claimed, there is, of course, no reason to suppose it will be denied access to the markets of the District. If it does not, then to open those markets to its sale without let or hindrance, because of the adoption of a trade name by which the product may be distinguished from other cream, would simply invite demoralization and render the law abortive.

## DEATHS DURING WEEK ENDED MARCH 19, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended March 19, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Mar. 19, 1932	Correspond- ing week, 1931
Policies in force.....	73, 791, 756	75, 080, 202
Number of death claims.....	16, 289	15, 823
Death claims per 1,000 policies in force, annual rate.....	11. 5	11. 0
Death claims per 1,000 policies, first 11 weeks of year, annual rate.....	10. 2	11. 3

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended March 19, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 19, 1932				Corresponding week, 1931		Death rate <sup>1</sup> for the first 11 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>2</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	9,777	13.9	725	60	13.5	897	12.5	14.1
Akron.....	48	9.4	7	87	9.3	3	8.1	8.7
Albany.....	43	17.2	1	20	14.5	1	14.5	15.5
Atlanta.....	88	16.2	7	68	16.5	6	14.4	16.8
White.....	42	11.7	5	74	12.4	3	11.2	13.7
Colored.....	46	25.1	2	57	24.6	3	20.6	23.0
Baltimore.....	280	17.8	14	50	17.7	37	14.7	17.9
White.....	214	16.7	8	36	16.0	20	13.6	16.5
Colored.....	66	23.0	6	56	25.2	17	19.7	23.9
Birmingham.....	64	12.1	9	94	18.6	11	12.5	16.3
White.....	33	10.0	4	66	14.7	5	10.4	11.8
Colored.....	31	15.4	5	135	24.9	6	15.8	21.0
Boston.....	241	16.0	29	88	14.6	15	15.3	16.8
Bridgeport.....	52	18.4	4	71	13.8	3	12.5	13.7
Buffalo.....	188	16.7	19	91	16.4	17	13.6	15.6
Cambridge.....	43	19.6	2	41	13.3	3	14.2	13.9
Camden.....	31	13.6	1	18	18.4	14	15.4	18.5
Canton.....	27	13.0	2	50	12.7	5	10.5	11.6
Chicago.....	739	11.0	56	55	11.0	70	11.1	12.2
Cincinnati.....	181	20.5	14	60	18.9	10	16.6	18.4
Cleveland.....	262	14.9	28	91	12.8	17	11.6	12.6
Columbus.....	87	15.2	11	111	12.7	11	15.0	14.7
Dallas.....	72	13.3	8	-----	12.6	4	11.8	12.5
White.....	62	13.9	7	-----	10.2	3	11.2	11.0
Colored.....	10	10.7	1	-----	24.2	1	14.6	19.6
Dayton.....	61	13.4	0	8	11.9	3	11.9	12.7
Denver.....	117	20.8	9	00	14.8	4	17.3	15.9
Des Moines.....	36	12.9	6	103	16.2	1	11.9	12.7
Detroit.....	319	9.7	28	50	9.3	42	8.8	9.8
Duluth.....	30	15.4	2	58	10.8	3	10.3	12.2
El Paso.....	32	15.6	6	-----	13.4	6	15.1	18.0
Erie.....	42	18.4	5	106	9.7	3	11.8	11.3
Evansville.....	20	9.9	0	0	14.5	6	10.2	12.0
Fall River.....	36	16.3	3	80	15.4	2	13.2	14.1
Flint.....	26	8.0	3	44	7.0	2	9.0	8.0
Fort Wayne.....	19	8.2	2	52	13.2	1	10.8	11.9
Fort Worth.....	43	13.2	3	-----	14.3	7	10.7	11.9
White.....	34	12.3	3	-----	13.4	6	10.3	11.4
Colored.....	9	17.6	0	-----	19.2	1	13.0	14.3
Grand Rapids.....	49	14.7	5	85	11.2	5	9.6	10.1
Houston.....	65	10.5	7	-----	8.4	2	11.0	11.9
White.....	48	10.5	5	-----	6.9	2	10.4	10.9
Colored.....	17	10.4	2	-----	12.6	0	12.5	14.4
Indianapolis.....	118	16.5	5	41	16.4	13	14.2	15.6
White.....	102	16.2	5	46	15.4	5	13.6	15.0
Colored.....	16	18.1	0	0	23.1	8	18.1	19.7
Jersey City.....	96	15.6	5	41	10.8	12	11.8	14.0
Kansas City, Kans.....	35	14.8	1	22	12.7	3	13.5	16.7
White.....	27	14.1	1	27	12.1	3	13.2	15.1
Colored.....	8	17.6	0	0	15.5	0	14.6	23.4
Kansas City, Mo.....	103	12.9	4	45	16.1	11	13.1	15.8
Knoxville.....	31	14.5	0	0	12.9	3	12.1	14.8
White.....	19	10.6	0	0	9.7	3	11.2	13.5
Colored.....	12	34.3	0	0	29.3	0	16.9	21.0
Long Beach.....	34	11.0	0	0	13.7	1	10.8	10.5
Los Angeles.....	295	11.2	25	74	10.8	22	12.2	11.9
Louisville.....	115	19.5	5	46	10.3	6	14.7	18.5
White.....	84	16.8	2	21	9.2	4	12.9	16.6
Colored.....	31	33.9	3	224	16.4	2	24.1	29.2
Lowell.....	26	13.6	2	52	15.6	5	14.7	15.1
Lynn.....	31	15.7	1	28	14.7	1	12.1	13.1
Memphis.....	81	16.1	8	87	14.1	8	16.8	17.6
White.....	36	11.6	4	68	9.8	1	12.7	14.9
Colored.....	45	23.4	4	120	21.1	7	23.4	21.9
Miami.....	34	15.6	3	84	13.0	4	12.8	14.5
White.....	19	11.2	1	39	18.2	3	12.0	13.8
Colored.....	15	31.0	2	201	12.4	1	18.4	18.0

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended March 19, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Mar. 19, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 11 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Milwaukee.....	108	9.4	6	29	10.0	15	9.7	10.9
Minneapolis.....	116	12.6	19	124	13.3	17	11.7	12.4
Nashville <sup>4</sup> .....	67	22.3	3	45	17.8	3	15.2	18.5
White.....	49	22.5	3	59	17.6	3	14.6	16.2
Colored.....	18	21.9	0	0	18.3	0	16.8	24.6
New Bedford <sup>5</sup> .....	27	12.5	7	201	13.9	6	13.1	13.3
New Haven.....	48	15.4	0	0	13.1	1	12.9	13.8
New Orleans <sup>6</sup> .....	164	18.1	16	91	19.9	14	15.8	19.6
White.....	100	15.5	13	113	15.4	5	13.3	16.1
Colored.....	64	24.4	3	49	31.0	9	22.0	28.4
New York.....	1,932	14.0	118	53	12.6	170	11.8	13.8
Bronx Boro.....	292	11.0	18	52	8.8	24	9.0	10.0
Brooklyn Boro.....	688	13.4	43	48	12.2	64	11.0	12.9
Manhattan Boro.....	700	20.6	43	61	19.1	65	17.9	20.9
Queens Boro.....	200	8.6	12	50	8.2	16	7.6	9.1
Richmond Boro.....	52	10.2	2	39	10.5	1	14.8	14.6
Newark, N. J.....	127	14.8	9	49	12.0	11	11.9	14.1
Oakland.....	65	11.4	4	50	13.7	3	11.9	12.2
Oklahoma City.....	56	14.2	7	96	13.0	8	10.3	11.9
Omaha.....	65	15.5	6	68	15.9	5	15.4	14.7
Paterson.....	50	18.8	6	109	15.8	1	13.5	16.5
Peoria.....	30	14.1	1	28	6.7	3	13.0	14.1
Philadelphia.....	567	15.0	51	79	15.4	59	13.2	16.5
Pittsburgh.....	205	15.7	15	69	17.0	23	15.4	18.3
Portland, Oreg.....	77	12.9	2	26	15.5	4	12.7	13.1
Providence.....	77	15.7	7	68	15.3	6	15.0	15.9
Richmond <sup>6</sup> .....	44	12.4	3	45	17.0	9	15.0	18.3
White.....	22	8.7	3	67	16.3	6	12.5	15.4
Colored.....	22	21.8	0	0	18.7	3	21.2	25.4
Rochester.....	89	13.9	4	38	13.7	9	12.5	14.1
St. Louis.....	236	14.8	19	68	17.1	11	14.2	18.6
St. Paul.....	61	12.0	4	43	16.6	7	11.2	11.8
Salt Lake City <sup>7</sup> .....	34	12.2	5	79	14.2	1	12.1	12.7
San Antonio.....	65	13.8	9		14.1	11	15.1	15.3
San Diego.....	41	13.1	1	22	14.3	2	16.8	15.7
San Francisco.....	166	13.1	6	42	14.2	8	14.3	14.9
Schenectady.....	22	11.9	0	0	11.9	2	11.3	12.1
Seattle.....	89	12.4	5	50	14.9	4	12.5	13.3
Somerville.....	19	9.3	0	0	11.4	1	9.8	11.9
South Bend.....	18	8.6	1	20	12.1	2	8.4	9.3
Spokane.....	37	16.5	2	53	19.7	4	12.8	13.4
Springfield, Mass.....	37	12.5	1	17	10.9	2	11.9	14.3
Syracuse.....	50	12.1	4	52	14.9	8	11.9	13.1
Tacoma.....	30	14.5	1	28	16.0	1	12.3	15.3
Tampa <sup>8</sup> .....	30	14.5	1	29	9.4	2	12.5	15.1
White.....	25	15.3	1	35	10.7	2	12.3	13.7
Colored.....	5	11.5	0	0	4.7	0	13.3	20.3
Toledo.....	95	16.5	5	54	16.0	12	13.3	13.8
Trenton.....	57	24.0	1	20	14.7	1	16.3	19.2
Utica.....	36	18.3	1	28	16.3	1	18.8	16.7
Washington, D. C. <sup>9</sup> .....	195	20.6	6	34	18.9	21	17.1	18.8
White.....	130	19.0	4	33	16.0	14	15.5	16.2
Colored.....	65	24.9	2	36	26.7	7	21.1	25.4
Waterbury.....	30	15.4	4	132	10.3	7	10.2	11.3
Wilmington, Del. <sup>7</sup> .....	40	19.6	2	45	16.6	2	17.6	16.8
Worcester.....	69	18.2	4	56	16.9	6	13.6	15.5
Yonkers.....	29	10.7	6	155	13.5	4	7.8	11.0
Youngstown.....	34	10.1	3	49	13.0	7	10.5	12.1

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended March 26, 1932, and March 28, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 26, 1932, and March 28, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931
<b>New England States:</b>								
Maine.....	3	3	16	12	286	50	0	1
New Hampshire.....				1	8	55	0	0
Vermont.....	2				70	5	0	0
Massachusetts.....	42	42	16	5	514	430	4	1
Rhode Island.....	11	3			254	32	0	0
Connecticut.....	7	6	38	36	154	870	1	1
<b>Middle Atlantic States</b>								
New York.....	116	142	197	124	2,255	2,269	5	12
New Jersey.....	32	68	164	23	339	820	0	5
Pennsylvania.....	84	88			1,681	3,905	3	18
<b>East North Central States:</b>								
Ohio.....	40	25	94	177	618	721	6	5
Indiana.....	24	32	186	46	72	848	12	6
Illinois.....	82	133	145		365	1,386	3	18
Michigan.....	27	36	71	47	906	127	6	6
Wisconsin.....	13	13	505	204	570	660	1	3
<b>West North Central States:</b>								
Minnesota.....	6	23	5	1	20	129	3	0
Iowa.....	8	5			4	13	1	5
Missouri.....	23	78	55	81	45	366	1	16
North Dakota.....	1	8			55	89	1	0
South Dakota.....	2	10		3	9	78	0	1
Nebraska.....	6	10		3	8	6	1	1
Kansas.....	15	14	22	12	128	18	1	1
<b>South Atlantic States:</b>								
Delaware.....	8	2		5	3	126	0	0
Maryland <sup>1</sup> .....	12	20	345	125	25	1,422	1	1
District of Columbia.....	7	13	11		2	280	2	2
Virginia.....								2
West Virginia.....	17	9	284	205	438	106	1	1
North Carolina.....	17	23	169	75	670	514	2	5
South Carolina <sup>2</sup> .....	6	11	1,909	1,867	114	100	0	3
Georgia <sup>3</sup> .....	15	6	125	549	25	114	1	1
Florida.....	6	4		28	3	152	0	2
<b>East South Central States:</b>								
Kentucky.....	25		790		118	301	6	2
Tennessee.....	3	12	1,137	270	174	250	1	6
Alabama <sup>4</sup> .....	10	19	123	761	12	467	1	19
Mississippi.....	7	7					0	0
<b>West South Central States:</b>								
Arkansas.....	3	3	308	279	5	33	0	4
Louisiana.....	17	13	60	47	219	9	0	4
Oklahoma <sup>4</sup> .....	21	14	504	169	21	28	0	1
Texas <sup>4</sup> .....	49	29	33	86	35	60	0	1

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, 6 cases: 1 case in South Carolina, 3 cases in Georgia, 1 case in Alabama, and 1 case in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 26, 1932, and March 28, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931
<b>Mountain States:</b>								
Montana.....		1	44		113	7	1	0
Idaho.....	1			2		1	0	0
Wyoming.....		1			4	3	0	0
Colorado.....		13			183	207	0	1
New Mexico.....	10	5	2	18	92	55	0	0
Arizona.....	4	4	24	40	1	190	0	2
Utah.....	1				1	3	1	2
<b>Pacific States:</b>								
Washington.....	1	5	9	72	649	46	1	2
Oregon.....	2	4	170	219	219	97	0	0
California.....	64	55	113	229	431	1,795	4	4
<b>Total reported.....</b>	<b>850</b>	<b>1,013</b>	<b>7,579</b>	<b>5,711</b>	<b>11,918</b>	<b>19,603</b>	<b>65</b>	<b>166</b>

Division and State	Polioomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931
<b>New England States:</b>								
Maine.....	0	0	33	22	0	0	0	0
New Hampshire.....	0	0	46	6	0	0	0	0
Vermont.....	0	0	10	7	4	0	0	0
Massachusetts.....	0	1	586	415	0	0	2	1
Rhode Island.....	0	0	78	67	0	0	2	0
Connecticut.....	0	0	91	85	2	0	0	0
<b>Middle Atlantic States:</b>								
New York.....	2	2	1,789	1,050	3	13	7	9
New Jersey.....	1	1	345	305	0	0	4	4
Pennsylvania.....	1	1	524	455	0	0	10	8
<b>East North Central States:</b>								
Ohio.....	0	4	302	432	21	80	1	4
Indiana.....	0	0	151	318	10	75	0	1
Illinois.....	1	0	433	584	13	27	14	2
Michigan.....	0	0	459	387	6	18	2	2
Wisconsin.....	0	0	95	191	0	9	1	1
<b>West North Central States:</b>								
Minnesota.....	1	0	103	97	1	14	0	1
Iowa.....	0	0	56	80	26	70	1	0
Missouri.....	0	0	72	368	4	51	2	14
North Dakota.....	0	0	13	54	6	8	0	0
South Dakota.....	2	0	4	19	8	14	1	3
Nebraska.....	0	0	37	69	14	49	0	0
Kansas.....	0	1	56	76	4	112	6	0
<b>South Atlantic States:</b>								
Delaware.....	0	0	26	21	0	0	0	0
Maryland.....	0	0	136	87	0	0	0	6
District of Columbia.....	0	0	20	30	0	0	0	0
Virginia.....	1							
West Virginia.....	0	0	26	31	17	12	7	6
North Carolina.....	0	0	63	37	2	1	8	2
South Carolina.....	3	2	9	4	1	0	19	9
Georgia.....	0	0	5	60	0	0	1	3
Florida.....	0	0	5	3	0	3	23	4
<b>East South Central States:</b>								
Kentucky.....	0	0	82	49	8	10	6	2
Tennessee.....	0	0	18	51	17	33	10	7
Alabama.....	0	0	18	23	5	8	3	2
Mississippi.....	0	0	18	14	8	38	9	2
<b>West South Central States:</b>								
Arkansas.....	0	0	12	14	8	26	1	2
Louisiana.....	0	0	6	20	5	26	12	8
Oklahoma.....	0	0	25	46	15	76	0	8
Texas.....	0	0	36	37	32	45	4	2

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, 6 cases: 1 case in South Carolina, 3 cases in Georgia, 1 case in Alabama, and 1 case in Texas.

<sup>3</sup> Exclusive of Oklahoma City and Tulsa.



*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 26, 1932, and March 28, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931	Week ended Mar. 26, 1932	Week ended Mar. 28, 1931
<b>Mountain States:</b>								
Montana.....	1	0	37	21	0	6	1	1
Idaho.....	0	0	0	6	0	1	4	0
Wyoming.....	0	0	8	16	0	4	2	1
Colorado.....	0	0	35	31	1	7	1	0
New Mexico.....	0	0	9	6	0	0	0	0
Arizona.....	0	0	6	8	0	0	3	2
Utah <sup>1</sup> .....	0	0	6	18	0	0	1	0
<b>Pacific States:</b>								
Washington.....	0	0	34	38	20	26	2	7
Oregon.....	0	0	12	20	23	16	2	5
California.....	0	2	135	162	23	46	8	5
<b>Total reported</b> .....	<b>13</b>	<b>14</b>	<b>6,070</b>	<b>5,940</b>	<b>316</b>	<b>933</b>	<b>171</b>	<b>134</b>

<sup>1</sup> Week ended Friday.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- goc- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Meas- les	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>January, 1932</i>										
Hawaii Territory.....	2	9	3	-----	334	-----	0	2	0	7
<i>February, 1932</i>										
Delaware.....	-----	12	7	-----	3	-----	1	53	0	4
Idaho.....	4	9	15	-----	6	-----	0	36	9	16
Illinois.....	41	425	639	13	709	1	19	1,728	26	33
Louisiana.....	5	117	50	12	140	16	1	73	22	67
Maine.....	-----	18	166	-----	2,338	1	0	106	0	5
Maryland.....	10	130	196	-----	111	-----	1	511	0	19
Minnesota.....	2	46	9	-----	183	-----	1	543	8	12
Missouri.....	8	161	175	-----	110	-----	1	373	67	11
Montana.....	3	8	8,561	-----	295	-----	1	193	5	3
New Mexico.....	1	100	2,175	1	261	1	2	52	9	13
New York.....	37	597	-----	1	7,553	-----	22	5,600	11	42
North Carolina.....	6	113	201	-----	1,139	44	5	207	16	21
Ohio.....	10	272	1,600	-----	2,856	1	2	1,617	184	27
Oregon.....	-----	15	1,253	1	383	-----	0	82	44	6
Pennsylvania.....	18	570	-----	-----	7,509	-----	2	3,066	0	75
Porto Rico.....	-----	51	80	4,084	76	8	1	0	0	11
Rhode Island.....	-----	22	22	-----	3,783	-----	0	212	0	0

<sup>1</sup> Estimates included.

January, 1932		February, 1932	
Hawaii Territory:	Cases	Anthrax.	Cases
Chicken pox.....	42	Oregon.....	1
Conjunctivitis, follicular.....	39	Chicken pox:	
Hookworm disease.....	19	Delaware.....	44
Impetigo contagiosa.....	1	Idaho.....	32
Leprosy.....	4	Illinois.....	1,618
Mumps.....	6	Louisiana.....	23
Trachoma.....	10	Maine.....	164
Whooping cough.....	19	Maryland.....	643

Chicken pox—Continued.	Cases	Lethargic encephalitis—Continued.	Cases
Minnesota.....	234	Maine.....	1
Missouri.....	479	New Mexico.....	1
Montana.....	73	New York.....	9
New Mexico.....	100	Ohio.....	1
New York.....	2,763	Pennsylvania.....	6
North Carolina.....	612	Mumps:	
Ohio.....	1,813	Delaware.....	53
Oregon.....	167	Idaho.....	39
Pennsylvania.....	4,240	Illinois.....	319
Porto Rico.....	72	Louisiana.....	5
Rhode Island.....	104	Maine.....	77
Colibacillosis:		Maryland.....	552
Porto Rico.....	1	Missouri.....	84
Conjunctivitis:		Montana.....	21
New Mexico.....	19	New Mexico.....	30
Dengue:		New York.....	1,503
Porto Rico.....	1	Ohio.....	1,126
Diarrhea:		Oregon.....	107
Maryland.....	11	Pennsylvania.....	3,363
Diarrhea and enteritis:		Porto Rico.....	48
Ohio (under 2 years).....	16	Rhode Island.....	161
Dysentery:		Ophthalmia neonatorum.	
Illinois.....	23	Illinois.....	9
Illinois (amebic).....	1	Maryland.....	5
Louisiana.....	1	Minnesota.....	1
Maryland.....	5	New York.....	6
Minnesota.....	1	North Carolina.....	1
Minnesota (amebic).....	1	Ohio.....	64
Missouri.....	6	Pennsylvania.....	12
Montana.....	1	Porto Rico.....	11
New York.....	10	Rhode Island.....	1
Ohio.....	1	Paratyphoid fever:	
Porto Rico.....	49	Illinois.....	1
Filariasis:		Maryland.....	1
Porto Rico.....	8	New York.....	1
Food poisoning:		Ohio.....	2
Ohio.....	5	Oregon.....	2
German measles:		Porto Rico.....	1
Illinois.....	12	Puerperal septicemia:	
Maine.....	156	Illinois.....	7
Maryland.....	20	New Mexico.....	1
Montana.....	3	New York.....	29
New Mexico.....	6	Ohio.....	6
New York.....	135	Pennsylvania.....	23
North Carolina.....	68	Porto Rico.....	3
Ohio.....	27	Rabies in animals:	
Pennsylvania.....	96	Illinois.....	6
Porto Rico.....	2	Louisiana.....	7
Granuloma:		Missouri.....	5
Maryland.....	1	New York.....	7
Hookworm disease:		Oregon.....	1
Illinois.....	13	Scabies:	
Impetigo contagiosa:		Maryland.....	15
Illinois.....	2	Montana.....	2
Maryland.....	25	Oregon.....	60
Montana.....	7	Septic sore throat.	
Oregon.....	70	Idaho.....	1
Lead poisoning:		Illinois.....	24
Illinois.....	8	Louisiana.....	5
Ohio.....	6	Maine.....	1
Leprosy:		Maryland.....	11
Illinois.....	1	Missouri.....	11
Porto Rico.....	5	Montana.....	4
Lethargic encephalitis:		New Mexico.....	1
Illinois.....	11		
Louisiana.....	1		

\* Exclusive of New York City.

Septic sore throat—Continued.		Undulant fever—Continued.	
New York.....	42	Maine.....	1
North Carolina.....	17	Maryland.....	4
Ohio.....	153	Minnesota.....	2
Oregon.....	4	Missouri.....	3
Rhode Island.....	1	New York.....	20
Tetanus:		Ohio.....	2
Illinois.....	6	Oregon.....	2
Maryland.....	1	Pennsylvania.....	3
New York.....	3	Vincent's angina:	
Ohio.....	1	Illinois.....	21
Pennsylvania.....	3	Maine.....	2
Porto Rico.....	4	Maryland.....	10
Tetanus, infantile:		New York.....	54
Porto Rico.....	7	Oregon.....	6
Trachoma:		Whooping cough:	
Illinois.....	2	Delaware.....	54
Missouri.....	29	Idaho.....	9
New Mexico.....	2	Illinois.....	1,527
Ohio.....	5	Louisiana.....	40
Pennsylvania.....	2	Maine.....	143
Porto Rico.....	4	Maryland.....	839
Trichinosis:		Minnesota.....	74
Illinois.....	1	Missouri.....	845
New York.....	3	Montana.....	50
Tularaemia:		New Mexico.....	92
Illinois.....	7	New York.....	2,723
Louisiana.....	7	North Carolina.....	1,535
Maryland.....	1	Ohio.....	2,512
Missouri.....	2	Oregon.....	52
North Carolina.....	4	Pennsylvania.....	3,987
Ohio.....	3	Porto Rico.....	221
Pennsylvania.....	3	Rhode Island.....	64
Typhus fever:		Yaws:	
New York.....	1	Porto Rico.....	8
Undulant fever:			
Illinois.....	4		
Louisiana.....	1		

<sup>1</sup> Exclusive of New York City.

### PATIENTS IN INSTITUTIONS FOR THE CARE OF EPILEPTICS, APRIL TO JUNE, 1930

Reports for the second quarter of the year 1930 were received by the Public Health Service from 12 institutions for the care and treatment of epileptics, located in 12 States. The total number of patients, including those on parole or otherwise absent but still on the books, on June 30, 1930, was 8,402.

The first admissions were as follows:

	Male	Female	Total
April.....	78	56	134
May.....	71	51	122
June.....	76	40	116
Total.....	225	147	372

Of the new admissions during the three months, 60.5 per cent were males and 39.5 per cent were females, giving a ratio of 153 males per 100 females.

During the quarter 100 patients were discharged—59 males and 41 females. One hundred and seven male patients and 61 female

patients died. The annual death rates, based on the number of patients on the rolls of the institutions on June 30, 1930, were: Males, 95.6 per 1,000; females, 62.5 per 1,000; persons, 80.2 per 1,000.

At the end of June there were 4,488 males and 3,914 females on the rolls of the institutions, giving a ratio of 115 males per 100 females.

The following table shows for the 12 institutions the numbers of patients in the hospitals and on parole on April 1, 1930, and at the end of each month of the second quarter of the year.

	Apr 1, 1930	Apr 30, 1930	May 31, 1930	June 30, 1930
<b>Patients in hospitals:</b>				
Male .....	4,174	4,176	4,178	4,158
Female .....	3,709	3,714	3,713	3,709
Total .....	7,883	7,890	7,891	7,866
<b>Patients on parole:</b>				
Male .....	238	256	282	330
Female .....	155	168	190	206
Total .....	393	424	472	536
<b>Total patients on books:</b>				
Male .....	4,412	4,432	4,460	4,488
Female .....	3,864	3,882	3,903	3,914
Total .....	8,276	8,314	8,363	8,402
<b>Per cent of total patients on parole</b>				
Male .....	5.4	5.8	6.3	7.4
Female .....	4.0	4.3	4.9	5.3
Total .....	4.7	5.1	5.6	6.4

## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,635,000. The estimated population of the 90 cities reporting deaths is more than 32,075,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended March 19, 1932, and March 21, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
<b>Diphtheria:</b>			
46 States .....	972	934	
97 cities .....	401	409	770
<b>Measles:</b>			
46 States .....	12,133	17,548	
97 cities .....	4,763	6,620	
<b>Meningococcus meningitis:</b>			
46 States .....	75	156	
97 cities .....	45	92	
<b>Poliomyelitis</b>			
46 States .....	11	20	
<b>Scarlet fever:</b>			
46 States .....	6,571	5,923	
97 cities .....	3,172	2,481	1,616
<b>Smallpox:</b>			
46 States .....	394	990	
97 cities .....	30	142	60
<b>Typhoid fever:</b>			
46 States .....	169	115	
97 cities .....	27	27	21
<i>Deaths reported</i>			
<b>Influenza and pneumonia:</b>			
90 cities .....	1,380	1, "	
<b>Smallpox:</b>			
90 cities .....	0	0	

## City reports for week ended March 19, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine								
Portland	1	0	0		0	92	4	1
New Hampshire								
Concord	0	0	0		0	1	0	1
Manchester	0	0	0		1	0	0	0
Nashua	0	0	1		0	0	0	0
Vermont								
Barre	0	0	0		0	0	0	0
Burlington	3	0	0		0	5	0	0
Massachusetts								
Boston	36	27	18	3	0	48	32	14
Fall River	7	3	2	1	1	64	7	7
Springfield	19	3	1		0	19	28	2
Worcester	4	3	1		0	0	29	12
Rhode Island								
Pawtucket	0	1	0		0	0	0	0
Providence	3	7	4		1	119	3	12
Connecticut								
Bridgeport	1	5	1	3	2	9	0	6
Hartford	15	4	0		0	7	11	6
New Haven	20	1	0	7	0	0	7	4
MIDDLE ATLANTIC								
New York								
Buffalo	43	10	0	4	1	8	8	43
New York	221	203	98	214	66	138	156	342
Rochester	6	6	0	1	0	390	24	4
Syracuse	13	3	0		0	511	10	6
New Jersey								
Camden	8	4	5		0	3	1	3
Newark	55	15	4	22	2	19	97	20
Trenton	4	2	0	5	4	3	0	0
Pennsylvania								
Philadelphia	158	60	6	22	9	7	26	68
Pittsburgh	25	17	8	3	7	221	42	37
Reading	51	2	0		0	6	0	2
Scranton	7		1			1	0	
EAST NORTH CENTRAL								
Ohio								
Cincinnati	8	7	3	2	7	1	0	30
Cleveland	73	25	6	133	8	839	96	32
Columbus	3	2	3	3	3	0	2	7
Toledo	18	4	1	9	7	42	1	8
Indiana								
Fort Wayne	0	2	9		0	0	0	4
Indianapolis	42	4	0		2	4	107	12
South Bend	1	2	0		0	1	0	3
Terre Haute	2	1	0		2	1	0	5
Illinois								
Chicago	92	90	34	12	18	275	8	62
Springfield	1	1	2	3	1	0	4	6
Michigan								
Detroit	56	43	21	30	17	153	43	46
Flint	12	2	0	40	1	143	80	5
Grand Rapids	6	1	0		5	96	20	4

## City reports for week ended March 19, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL contd								
Wisconsin								
Kenosha	6	0	0		0	0	0	2
Madison	9	0	1			0	0	
Milwaukee	91	13	2	3	3	107	33	0
Racine	26	1	0		0	39	84	2
Superior	8	0	0	1	0	0	20	4
WEST NORTH CENTRAL								
Minnesota								
Duluth	5	0	0		4	1	0	3
Minneapolis	14	12	7		2	6	40	13
St. Paul	5	5	2	1	1	1	9	7
Iowa								
Davenport	3	1	2			0	0	
Des Moines	0	0	1			0	0	
Sioux City	2	0	1			0	2	
Waterloo	4	0	0			0	0	
Missouri								
Kansas City		5						
St. Joseph	4	0	1		1	0	1	0
St. Louis	38	35	20	1	1	3	1	11
North Dakota								
Fargo	1	0	0		0	14	0	0
Grand Forks	0	0	0			0	0	
South Dakota								
Aberdeen	0	0	0			8	0	
Nebraska								
Omaha	9	3	9		0	1	2	5
Kansas								
Topeka	14	1	1	1	0	1	1	2
Wichita	3	1	4		0	137	0	4
SOUTH ATLANTIC								
Delaware								
Wilmington	0	3	0		0	0	1	4
Maryland								
Baltimore	102	19	6	82	10	10	103	47
Cumberland	0	1	0	3	0	7	0	4
Frederick	0	0	1		0	1	0	0
District of Columbia								
Washington	42	12	9	2	4	3	0	17
Virginia								
Lynchburg	16	1	0		0	0	0	1
Norfolk	21	2	0		0	2	0	3
Richmond	5	3	0		0	0	0	2
Roanoke	0	1	0		1	0	0	3
West Virginia								
Charleston	5	1	1	5	1	72	0	0
Huntington	3	1	1		0	3	0	
Wheeling	1	0	0		3	2	0	4
North Carolina								
Raleigh	4	0	0		0	16	0	4
Wilmington	0	0	1		0	0	0	2
Winston-Salem	17	0	2		1	1	7	4
South Carolina								
Charleston	0	1	0	91	2	0	0	6
Columbia	1	0	0		0	1	1	3
Greenville	0	0	0		0	1	0	0
Georgia								
Atlanta	4	3	2	17	2	7	4	13
Brunswick	5	0	0		0	0	0	0
Savannah	4	1	0	7	1	4	1	4
Florida								
Miami	3	2	6		0	4	0	2
Tampa	1	1	3		0	0	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Covington	0	0	0		0	0	0	3
Tennessee:								
Memphis	11	3	0		1	0	1	9
Nashville	2	1	0		4	4	0	12

## City reports for week ended March 19, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL--contd								
Alabama								
Birmingham	5	2	1	11	2	0	10	6
Mobile	0	0	1		1	0	0	2
Montgomery	4	0	0			0	3	
WEST SOUTH CENTRAL								
Arkansas								
Fort Smith	0	0	0			0		
Little Rock	6	0	0		1	0	9	6
Louisiana								
New Orleans	0	12	19	3	4	0	0	13
Shreveport	0	0	0		1	6	4	1
Oklahoma								
Muskogee	0		0	1		0	5	
Oklahoma City	8	0	3	44	0	0	0	11
Texas								
Dallas	4	5	13	9	9	0	0	13
Fort Worth	7	4	7		0	1	1	4
Galveston	0	1	1		0	0	0	5
Houston	1	5	14		0	6	0	12
San Antonio	0	3	2		3	0	0	11
MOUNTAIN								
Montana								
Billings	3	0	0		0	0	0	0
Great Falls	7	1	0		2	1	0	1
Helena	2	0	0		0	2	0	0
Missoula	0	0	0	26	1	0	0	0
Idaho								
Boise	2	0	0		0	0	2	0
Colorado								
Denver	10	7	5		1	41	43	20
Pueblo	49	0	0		0	0	0	3
New Mexico								
Albuquerque	7	0	1		0	40	5	4
Arizona								
Phoenix	0		0		0	0	0	2
Utah								
Salt Lake City	25	2	0		1	1	0	3
Nevada								
Reno	0	0	0		0	0	0	0
PACIFIC								
Washington								
Seattle	20	3	0			440	3	
Spokane	3	2	0			1	0	
Tacoma	11	1	0		0	24	0	6
Oregon								
Portland	14	7	3	2	1	56	10	11
Salem	0	0	0	9		0	0	
California								
Los Angeles	221	35	38	86	4	7	25	17
Sacramento	26	1	1		0	130	0	5
San Francisco	94	12	8	3	1	156	4	12

## City reports for week ended March 19, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis deaths re-ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, es- timated expec- tancy	Cases re- ported	Cases, es- timated expec- tancy	Cases re- ported	Deaths re- ported		Cases, es- timated expec- tancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	4	7	0	0	0	0	0	0	0	10	23
New Hampshire:											
Concord .....	0	6	0	0	0	0	0	0	0	0	13
Manchester .....	2	19	0	0	0	0	0	0	0	0	16
Nashua .....	0	2	0	0	0	0	0	0	0	0	—
Vermont:											
Barre .....	0	0	0	0	0	1	0	0	0	1	3
Burlington .....	0	0	1	0	0	0	0	0	0	0	—
Massachusetts:											
Boston .....	91	174	0	0	0	7	1	0	0	44	241
Fall River .....	5	4	0	0	0	2	0	1	0	4	36
Springfield .....	9	8	0	0	0	1	0	0	0	7	36
Worcester .....	11	37	0	0	0	4	0	0	0	6	69
Rhode Island:											
Pawtucket .....	3	0	0	0	0	0	0	0	0	0	16
Providence .....	15	24	0	0	0	3	0	0	0	6	77
Connecticut:											
Bridgeport .....	13	6	0	0	0	1	0	0	0	4	52
Hartford .....	8	15	0	0	0	1	0	0	0	23	61
New Haven .....	6	21	0	0	0	1	0	0	0	14	48
MIDDLE ATLANTIC											
New York:											
Buffalo .....	29	173	0	0	0	11	0	0	0	11	182
New York .....	335	1,113	0	0	0	102	8	1	1	185	1,932
Rochester .....	11	46	0	0	0	1	0	0	0	5	83
Syracuse .....	12	31	0	0	0	0	0	0	0	46	50
New Jersey:											
Camden .....	6	45	0	0	0	3	0	0	0	4	31
Newark .....	43	43	0	0	0	11	0	0	0	18	130
Trenton .....	7	9	0	0	0	3	0	0	0	2	57
Pennsylvania:											
Philadelphia .....	103	273	0	0	0	17	1	2	0	207	547
Pittsburgh .....	32	33	0	0	0	8	0	0	0	37	205
Reading .....	5	10	0	0	0	0	0	0	0	12	34
Scranton .....	—	52	—	—	—	—	—	—	—	4	—
EAST NORTH CENTRAL											
Ohio:											
Cincinnati .....	28	40	1	0	0	9	1	1	0	8	181
Cleveland .....	53	87	0	0	0	17	0	0	0	168	262
Columbus .....	12	8	2	7	0	4	0	0	0	60	87
Toledo .....	15	16	2	0	0	4	1	0	0	59	95
Indiana:											
Fort Wayne .....	5	1	1	0	0	0	0	2	0	6	19
Indianapolis .....	16	4	8	0	0	7	0	0	0	65	—
South Bend .....	3	1	0	0	0	1	0	0	0	1	18
Terre Haute .....	2	1	0	0	0	0	0	0	0	0	24
Illinois:											
Chicago .....	151	227	1	0	0	43	1	0	0	191	739
Springfield .....	3	7	0	0	0	0	0	0	1	5	16
Michigan:											
Detroit .....	128	227	3	0	0	21	0	1	0	125	319
Flint .....	15	4	1	0	0	1	0	0	0	15	26
Grand Rapids .....	12	9	0	0	0	0	1	0	0	5	49
Wisconsin:											
Kenosha .....	3	2	0	0	0	0	0	0	0	1	9
Madison .....	5	2	0	0	—	—	0	0	—	5	—
Milwaukee .....	31	42	0	0	0	0	0	0	0	142	—
Racine .....	4	1	0	0	0	1	0	0	0	1	19
Superior .....	4	1	0	0	0	0	0	0	0	0	—



## City reports for week ended March 19, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	9	4	0	0	0	0	0	0	0	0	30
Minneapolis.....	40	47	1	0	0	2	0	0	0	29	116
St. Paul.....	30	15	0	0	0	3	0	1	0	12	64
Iowa:											
Davenport.....	2	9	2	0	-----	-----	0	0	-----	0	-----
Des Moines.....	11	12	3	0	-----	-----	0	0	-----	0	36
Sioux City.....	2	5	0	2	-----	-----	0	0	-----	3	-----
Waterloo.....	1	1	0	0	-----	-----	0	0	-----	8	-----
Missouri:											
Kansas City.....	27	-----	2	-----	-----	-----	0	-----	-----	-----	-----
St. Joseph.....	1	1	1	0	0	0	0	0	0	3	21
St. Louis.....	43	14	3	0	0	6	0	0	0	83	236
North Dakota:											
Fargo.....	3	0	0	0	0	0	0	0	0	0	12
Grand Forks.....	0	0	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	0	0	0	1	-----	-----	0	0	-----	9	-----
Nebraska:											
Omaha.....	5	8	4	7	0	3	0	0	0	1	63
Kansas:											
Topeka.....	2	0	0	0	0	0	0	0	0	24	33
Wichita.....	3	0	2	0	0	1	0	0	0	1	24
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	11	0	0	0	1	0	0	0	11	40
Maryland:											
Baltimore.....	39	85	0	0	0	22	1	0	0	137	280
Cumberland.....	1	0	0	0	0	1	0	0	0	0	12
Frederick.....	0	1	0	0	0	0	0	0	0	0	1
Dist. of Columbia:											
Washington.....	28	29	0	0	0	23	0	1	0	14	195
Virginia:											
Lynchburg.....	0	3	0	0	0	2	0	0	0	11	13
Norfolk.....	2	4	0	0	0	4	0	0	0	3	33
Richmond.....	4	12	0	0	0	2	0	0	0	0	36
Roanoke.....	1	11	0	0	0	1	0	0	0	0	17
West Virginia:											
Charleston.....	1	1	0	0	0	0	1	0	0	11	9
Huntington.....	-----	0	-----	1	-----	-----	-----	1	-----	0	-----
Wheeling.....	2	0	0	0	0	2	0	0	0	7	26
North Carolina:											
Raleigh.....	0	0	1	0	0	1	0	0	0	0	14
Wilmington.....	0	0	0	0	0	0	0	0	0	7	12
Winston-Salem.....	1	32	0	0	0	1	0	0	0	22	26
South Carolina:											
Charleston.....	0	2	0	0	0	2	0	0	0	0	20
Columbia.....	0	0	0	0	0	0	0	0	0	0	15
Greenville.....	-----	0	0	0	-----	-----	-----	0	-----	0	-----
Georgia:											
Atlanta.....	6	2	1	0	0	4	0	0	0	1	88
Brunswick.....	0	0	0	0	0	0	0	0	0	0	2
Savannah.....	0	0	0	0	0	4	0	0	0	2	35
Florida:											
Miami.....	1	2	0	0	0	5	0	0	0	10	34
Tampa.....	0	0	0	0	0	1	1	0	0	0	29
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	0	0	0	0	1	0	0	0	0	25
Tennessee:											
Memphis.....	14	7	1	0	0	6	1	2	0	29	81
Nashville.....	4	0	0	0	0	1	0	0	0	6	67
Alabama:											
Birmingham.....	5	6	1	0	0	4	0	3	0	5	64
Mobile.....	0	6	0	2	0	2	0	0	0	0	23
Montgomery.....	0	0	1	0	-----	-----	0	0	-----	0	-----

## City reports for week ended March 19, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas											
Fort Smith	1	0	0	0			0	0		0	
Little Rock	3	2	1	0	0	1	0	0	0	4	9
Louisiana											
New Orleans	11	15	0	1	0	13	2	1	1	0	164
Shreveport	1	2	1	0	0	2	0	0	1	5	31
Oklahoma											
Muskogee		1		0				0		1	
Oklahoma City	2	5	2	0	0	3	1	0	0	7	56
Texas											
Dallas	5	4	1	0	0	4	0	4	2	4	72
Fort Worth	4	4	4	1	0	5	0	0	0	0	43
Galveston	0	0	0	0	0	0	0	2	1	0	17
Houston	3	4	3	3	0	5	0	0	0	0	65
San Antonio	2	0	0	0	0	6	0	0	0	0	65
MOUNTAIN											
Montana											
Billings	1	1	0	0	0	0	0	0	0	0	7
Great Falls	3	3	1	0	0	0	0	0	0	0	8
Helena	0	0	0	0	0	0	0	0	0	0	4
Missoula	0	2	0	0	0	0	0	0	0	0	12
Idaho											
Boise	1	0	0	2	0	0	0	0	0	0	1
Colorado											
Denver	16	14	0	0	0	7	0	0	0	18	109
Pueblo	1	0	0	0	0	1	0	1	0	2	14
New Mexico											
Albuquerque	1	0	0	0	0	5	0	0	0	0	14
Arizona											
Phoenix	1	3	0	0	0	6	0	0	0	0	
Utah											
Salt Lake City	5	4	1	0	0	1	0	1	0	6	34
Nevada											
Reno	0	1	0	0	0	0	0	0	0	0	4
PACIFIC											
Washington											
Seattle	11	8	3	2				0		1	
Spokane	6	0	8	0			0	0		0	
Tacoma	2	3	3	1	0	1	0	0	0	3	30
Oregon											
Portland	6	1	11	5	0	6	0	0	0	7	77
Salem	0	0		0				0		2	
California											
Los Angeles	42	59	3	2	0	27	0	1	0	44	295
Sacramento	3	0	1	6	0	2	0	0	0	1	19
San Francisco	28	7	1	1	0	9	1	0	0	14	166

Division, State, and city	Meningococcus meningitis		Lethal enccephalitis		Pellagra		Polioomyelitis (infantile paralysis)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Deaths
<b>NEW ENGLAND</b>								
Massachusetts								
Boston	5	3	0	0	0	0	0	1
Worcester	0	0	0	0	0	0	0	1

## City reports for week ended March 19, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Pollomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York.....	10	6	1	2	0	0	0	1	1
Syracuse.....	0	0	0	0	0	0	0	0	1
New Jersey:									
Newark.....	1	0	0	0	0	0	0	0	0
Trenton.....	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	5	3	1	1	1	1	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland.....	1	1	1	0	0	0	0	0	0
Indiana:									
Indianapolis.....	7	2	0	0	0	0	0	0	0
South Bend.....	1	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	2	2	0	0	0	1	1	0	0
Michigan:									
Detroit.....	2	1	0	0	0	0	0	0	0
Flint.....	0	1	0	0	0	0	0	0	0
Wisconsin:									
Kenosha.....	1	1	0	0	0	0	0	0	0
Milwaukee.....	0	0	1	1	0	0	0	0	0
WEST NORTH CENTRAL									
Iowa:									
Sioux City.....	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC <sup>1</sup>									
District of Columbia:									
Washington.....	3	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	1	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	1	0	0	0
Georgia:									
Atlanta.....	0	0	0	0	2	2	0	0	0
Savannah.....	0	0	0	0	2	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis.....	1	0	0	0	0	1	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	2	0	0	0	0
Montgomery.....	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	1	0	0	0	0	0	0	0
Louisiana:									
New Orleans.....	3	1	0	0	0	0	0	0	0
Shreveport.....	0	1	0	0	0	0	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
Fort Worth.....	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
PACIFIC									
Oregon:									
Portland.....	0	1	0	0	0	0	0	0	0
California:									
Los Angeles.....	1	1	0	0	1	0	0	1	1
San Francisco.....	0	0	0	0	1	0	0	0	0

<sup>1</sup> Typhus fever, 1 case at Norfolk, Va.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended March 19, 1932, compared with those for a like period ended March 21, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, February 14 to March 19, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Feb 20, 1932	Feb 21, 1931	Feb 27, 1932	Feb 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931
98 cities.....	72	68	64	70	62	73	59	65	<sup>2</sup> 62	65
New England.....	104	70	65	89	48	106	53	79	65	67
Middle Atlantic.....	65	61	72	56	63	61	56	67	54	64
East North Central.....	57	60	45	78	66	75	54	72	48	72
West North Central.....	85	59	69	55	49	71	74	63	<sup>2</sup> 100	73
South Atlantic.....	88	47	61	77	78	93	59	53	49	73
East South Central.....	75	59	46	59	35	29	46	35	12	23
West South Central.....	158	189	119	132	102	118	135	68	162	71
Mountain.....	52	35	9	87	9	61	26	26	43	17
Pacific.....	47	59	87	57	57	63	44	55	89	51

## MEASLES CASE RATES

98 cities.....	533	606	571	703	698	769	171	947	<sup>2</sup> 740	1,041
New England.....	1,589	541	1,510	635	1,740	909	901	1,346	860	1,527
Middle Atlantic.....	394	652	466	645	504	874	644	1,026	578	1,158
East North Central.....	577	254	590	300	910	349	946	582	1,167	553
West North Central.....	197	1,057	225	874	241	643	165	595	<sup>2</sup> 370	492
South Atlantic.....	359	2,206	282	2,805	424	2,241	286	2,758	302	3,448
East South Central.....	12	1,134	0	1,051	17	1,045	68	1,157	23	1,004
West South Central.....	251	24	234	24	257	68	99	37	40	51
Mountain.....	138	1,566	250	1,210	198	1,331	509	1,462	388	1,288
Pacific.....	1,125	243	1,296	223	1,313	347	1,205	357	1,443	394

## SCARLET FEVER CASE RATES

98 cities.....	417	346	441	373	475	345	481	375	<sup>2</sup> 493	399
New England.....	738	589	673	606	668	527	709	589	724	676
Middle Atlantic.....	631	342	604	341	777	359	799	389	786	392
East North Central.....	356	353	372	364	382	346	382	339	394	395
West North Central.....	241	497	248	509	231	492	178	518	<sup>2</sup> 212	589
South Atlantic.....	231	305	284	364	312	354	327	311	371	342
East South Central.....	75	534	121	558	87	405	81	482	110	487
West South Central.....	86	139	66	125	60	71	79	95	89	102
Mountain.....	267	296	172	305	155	305	172	400	215	306
Pacific.....	128	94	124	145	158	122	135	96	147	110

See footnotes at end of table.

*Summary of weekly reports from cities, February 14 to March 19, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Feb. 20, 1932	Feb. 21, 1931	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931
98 cities.....	4	20	4	20	4	13	5	19	5	22
New England.....	5	0	5	0	10	0	0	0	0	0
Middle Atlantic.....	0	3	1	0	0	0	0	0	0	0
East North Central.....	1	13	1	11	7	15	5	9	4	8
West North Central.....	13	128	19	128	6	57	11	132	20	130
South Atlantic.....	0	2	0	0	6	0	0	0	0	0
East South Central.....	29	18	17	23	17	23	46	0	12	12
West South Central.....	7	51	7	64	7	47	0	61	13	95
Mountain.....	0	44	0	9	0	17	17	17	17	9
Pacific.....	21	22	13	39	4	12	13	41	11	43

## TYPHOID FEVER CASE RATES

	3	4	5	7	6	4	5	3	4	4
98 cities.....										
New England.....	0	0	2	5	5	5	0	0	2	2
Middle Atlantic.....	4	3	4	6	4	3	3	2	1	2
East North Central.....	3	0	4	3	6	1	1	2	2	2
West North Central.....	0	4	2	11	0	11	2	0	2	8
South Atlantic.....	10	10	16	22	20	12	25	6	2	16
East South Central.....	0	0	12	6	17	18	6	18	29	0
West South Central.....	3	7	7	14	16	0	10	14	23	10
Mountain.....	0	9	0	0	0	0	9	0	17	0
Pacific.....	2	12	6	4	0	2	8	4	2	8

## INFLUENZA DEATH RATES

	20	40	34	50	37	44	37	34	37	32
91 cities.....										
New England.....	7	43	14	24	17	19	19	36	10	19
Middle Atlantic.....	13	42	39	40	42	32	47	23	39	23
East North Central.....	18	61	37	61	41	48	39	28	40	28
West North Central.....	49	68	29	74	32	59	15	60	84	47
South Atlantic.....	18	123	31	79	33	73	39	57	49	49
East South Central.....	25	140	44	76	13	140	25	102	60	115
West South Central.....	60	97	24	45	71	52	37	65	61	85
Mountain.....	78	61	69	17	34	44	26	35	43	35
Pacific.....	14	26	14	41	12	34	7	36	12	34

## PNEUMONIA DEATH RATES

	164	218	157	212	189	194	193	191	187	184
91 cities.....										
New England.....	120	276	192	236	192	185	194	147	156	183
Middle Atlantic.....	162	236	184	217	221	229	250	214	238	216
East North Central.....	133	187	110	192	158	154	131	139	133	132
West North Central.....	285	147	244	218	241	218	215	159	170	215
South Atlantic.....	163	340	173	313	196	265	224	332	233	269
East South Central.....	144	267	138	274	169	229	182	242	201	210
West South Central.....	165	228	108	221	172	149	148	211	205	180
Mountain.....	198	200	224	191	198	131	207	235	233	122
Pacific.....	91	70	104	91	102	101	118	125	93	101

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Kansas City, Mo., not included.

## FOREIGN AND INSULAR

### INFLUENZA IN EUROPE

*England and Wales.*—The following table gives the number of deaths from influenza reported in 117 great towns in England and Wales, including London, during the 10 weeks ended March 5, 1932.

Week ended—	Number of deaths	Week ended—	Number of deaths
1932		1932	
Jan. 2.....	240	Feb. 6.....	278
Jan. 9.....	412	Feb. 13.....	279
Jan. 16.....	412	Feb. 20.....	364
Jan. 23.....	392	Feb. 27.....	324
Jan. 30.....	313	Mar. 5.....	298

*Denmark.*—The number of cases of influenza reported in Denmark during the month of January, 1932, was 10,174, as compared with 4,423 cases in December and 4,801 in November, 1931. The disease is said to be of a mild type, the mortality being very low.

The number of cases of influenza reported in the city of Copenhagen during the five weeks ended February 20 is shown in the following table.

Week ended—	Number of cases	Week ended—	Number of cases
1932		1932	
Jan. 23.....	498	Feb. 13.....	2,863
Jan. 30.....	794	Feb. 20.....	7,144
Feb. 6.....	913		

*Switzerland.*—A mild type of influenza was reported to be prevalent in Switzerland, the number of deaths attributed to the disease in districts with more than 10,000 population being 22 during the week ended February 13, 1932, and 15 during the following week.

Cases of influenza were reported in the city of Berne during the three weeks ended February 20, 1932, as follows:

Week ended—	Number of cases	Week ended—	Number of cases
Feb. 6, 1932.....	675	Feb. 20, 1932.....	2,798
Feb. 13, 1932.....	2,504		

## CANADA

*Provinces—Communicable diseases—Week ended March 12, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended March 12, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Polio-myelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup>	-----	-----	-----	-----	-----
Nova Scotia	-----	35	-----	-----	8
New Brunswick	-----	-----	1	-----	1
Quebec	-----	-----	-----	-----	4
Ontario	1	705	-----	1	-----
Manitoba <sup>1</sup>	-----	-----	-----	-----	-----
Saskatchewan	-----	-----	-----	5	-----
Alberta <sup>1</sup>	-----	-----	-----	7	-----
British Columbia	-----	-----	-----	-----	-----
Total	1	740	1	13	8

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended March 12, 1932.*—During the week ended March 12, 1932, cases of certain communicable diseases were reported in the Province of Quebec, Canada, as follows:

Disease	Cases	Disease	Cases
Chicken pox	90	Puerperal septicemia	4
Diphtheria	39	Scarlet fever	77
German measles	5	Tuberculosis	20
Erysipelas	5	Typhoid fever	4
Measles	425	Whooping cough	46

## CZECHOSLOVAKIA

*Communicable diseases—January, 1932.*—During the month of January, 1932, certain communicable diseases were reported in Czechoslovakia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	5	-----	Puerperal fever	30	13
Cerebrospinal meningitis	20	5	Scarlet fever	1,574	21
Diphtheria	2,586	125	Trachoma	86	-----
Dysentery	5	2	Typhoid fever	323	36
Malaria	2	-----	Typhus fever	1	-----
Paratyphoid fever	9	-----			

## DENMARK

*Communicable diseases—December, 1931.*—During the month of December, 1931, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	5	Paratyphoid fever.....	53
Chicken pox.....	34	Pollomyelitis.....	5
Diphtheria and croup.....	326	Puerperal fever.....	20
Erysipelas.....	262	Scabies.....	841
German measles.....	14	Scarlet fever.....	222
Gonorrhea.....	856	Syphilis.....	92
Influenza.....	4,423	Typhoid fever.....	10
Lethargic encephalitis.....	7	Undulant fever (Bact. abort. Bang).....	36
Measles.....	2,071	Whooping cough.....	2,000
Mumps.....	218		

## EGYPT

*Cerebrospinal meningitis.*—According to a recent report, the city of Cairo and its environs were declared infected with cerebrospinal meningitis in a decree promulgated by the Egyptian Government on March 3, 1932. A similar decree was issued on February 21, 1932, with regard to the village of Mankarich, Beni Suef Province, and a number of towns and villages in Lower Egypt have also been declared infected.

The total number of cases and deaths from cerebrospinal meningitis reported in Egypt up to February 25, 1932, was 1,022, as compared with 60 last year.

## GREAT BRITAIN

*England and Wales—Vital statistics—October–December, 1931.*—During the fourth quarter of the year 1931, 147,619 births and 117,992 deaths were registered in England and Wales, giving a birth rate on an annual basis of 14.6 per 1,000 population and a death rate of 11.7 per 1,000. The figures are provisional. The mortality of infants under 1 year of age was 66 per 1,000 live births.

During the 13 weeks ended January 2, 1932, deaths from certain communicable diseases were reported in 107 county boroughs and great towns, including Greater London, as follows:

Disease	Number of deaths	Death rate per 1,000 population	Disease	Number of deaths	Death rate per 1,000 population
Diarrhea and enteritis (under 2 years).....	771	0.68	Measles.....	354	0.07
Diphtheria.....	394	0.34	Scarlet fever.....	54	.01
Influenza.....	1,176	.24	Typhoid fever.....	17	..
			Whooping cough.....	362	.07

Deaths from certain diseases in 159 smaller towns for the quarter ended December 31, 1931, were as follows:

Disease	Deaths	Disease	Deaths
Diarrhea and enteritis (under 2 years).....	83	Scarlet fever.....	22
Diphtheria.....	44	Smallpox.....	1
Influenza.....	299	Typhoid fever.....	5
Measles.....	28	Whooping cough.....	60



*England and Wales—Infectious diseases—Thirteen weeks ended January 2, 1932.*—During the 13 weeks ended January 2, 1932, cases of certain infectious diseases were reported in England and Wales as follows:

Disease	Cases	Disease	Cases
Diphtheria.....	12,823	Puerperal pyrexia.....	1,325
Ophthalmia neonatorum.....	1,133	Scarlet fever.....	22,811
Pneumonia.....	14,722	Smallpox.....	636
Puerperal fever.....	527	Typhoid fever.....	466

## ITALY

*Communicable diseases—Four weeks ended December 13, 1931.*—During the four weeks ended December 13, 1931, cases of certain communicable diseases were reported in Italy as follows:

Disease	Nov. 16-22		Nov. 23-29		Nov. 30-Dec. 6		Dec. 7-13	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax.....	21	19	21	18	13	13	18	16
Cerebrospinal meningitis.....	4	4	7	7	10	10	9	9
Chicken pox.....	301	96	281	113	316	124	315	121
Diphtheria and croup.....	553	284	624	319	659	347	610	302
Dysentery.....	8	5	6	4	3	3	6	6
Lethargic encephalitis.....			5	5				
Measles.....	1,067	162	1,459	191	1,210	195	1,576	179
Polioomyelitis.....	13	11	21	16	16	13	11	10
Scarlet fever.....	376	141	412	160	362	151	420	147
Smallpox.....				1		1		
Typhoid fever.....	547	311	472	237	485	259	382	212

## VIRGIN ISLANDS

*Notifiable diseases—January-February, 1932.*—During the months of January and February, 1932, cases of certain diseases were reported in the Virgin Islands as follows:

Disease	Cases		Disease	Cases	
	January	February		January	February
St. Thomas and St. John:			St. Croix—Continued.		
Gonorrhea.....	1		Filariasis.....		1
Malaria.....	2		Fish poisoning.....		1
Pellagra.....	1	1	Gonorrhea.....	3	1
Syphilis.....	17	5	Leprosy.....	2	2
Tuberculosis.....	1	1	Malaria.....	230	135
Uncinariasis.....		1	Puerperal fever.....		1
St. Croix:			Syphilis.....	3	5
Chancroid.....		1	Tuberculosis.....	8	3
Chicken pox.....	8	16	Whooping cough.....		3
Dengue.....	1				

From medical officers of the Public Health Service, American consuls, Pan American Sanitary Bureau, Health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

[C indicates cases; D, deaths; P, present]

[illegible]









## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—																				
	Aug. 23- Sept. 19 1931	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	December, 1931				January, 1932					February, 1932				March, 1932			
					19	26	2	9	16	23	30	6	13	20	27	5	12				
Iraq: Baghdad.....	3		2	7	1																
Mandhan.....	1		3	2																	1
Madagascar (see also table below): Tamatave.....			1	1																	
Morocco.....	2	1		1																	
Peru (see table below).		8		11																	
Senegal (see table below).			6																		
Siam.....																					
Spain: Hospitales—Barcelona Province.....	4	4	5	5	1																1
Syria: Beirut.....	3	3	2	2	1																
Tunisia: Tunis.....	2	2	7	1																	
Union of South Africa: Orange Free State.....	2	3	1	1																	
	1	1	1																		
	P	P		P																	
																				2	





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX

[C indicates cases; D, deaths; P, present]

Place	Sept. 17, 1931	Oct. 18, 1931	Nov. 15, 1931	Week ended—															
				December, 1931				January, 1932				February, 1932				March, 1932			
	17, 1931	14, 1931	12, 1931	19	26	2	9	16	23	30	6	13	20	27	5	12	19		
Aden.....	C																		
Algeria.....											2								
Algeria.....		1										2							
Southern Territories.....	C																		
Brasilia.....	C																		
Porto Alegre (alastim).....	C	46	51		14	8	13	7	4	17	6	12							
Rio de Janeiro.....	C	2	3	1	1		1												
Santos.....	C																		
British East Africa: Tanganyika.....	C	1, 184	18	2			55	4		8	12								
British South Africa: Northern Rhodesia.....	D	1, 97	2				4			5	2								
Southern Rhodesia.....	C	1					7		5										
Canada.....	C						1												
Alaska.....	C	12	6	3	9	2	2	1	4	8	5	8	10	4	3	7			
British Columbia.....	C	2							5		5								
Manitoba.....	C		2																
Nova Scotia.....	C	1												1					
Ontario.....	C	17	15	11	10	2	2	3	2		1	4	16		1	1			
North Bay.....	C							1											
Ottawa.....	C	8	12	1															
Toronto.....	C																		
Quebec.....	C					2	1		1										
Saskatchewan.....	C	11	33	34		1	10	21	7		7		23		8				
Regina.....	C	2													7	5			
Chile.....	C																		
Santiago.....	C		3																
Tecapilla.....	D					2													
China.....	C	2	8	46	60	40	43	87	60	54	32	35	34	30	22	15			
Amoy.....	C	1	6	30	22	19	18	14	28	26	28	11	14	12	7	5			
Canton.....	D	6	14	3	5	4	4	3	11	5	8	13	6	5	15				

Foochow.....	C	P	1	18	P	29	6	1	P	34	6	1	P	15	1	P	2
Hankow.....	C	D			P	6	1	7	P	34	6	1	P	32	1	P	2
Hong Kong.....	C	D			P			1	P	3	1	2	P	2	1	P	1
Manchuria--Dairen.....	C	D			P			1	P	1	1	1	P	4	6	P	7
Nanking.....	C	D			P			1	P	4	4	2	P	1	1	P	9
Shanghai--	C	D			P			1	P				P	1	1	P	3
Foreigners only.....	C	D	98	21	P	77	16	40	P	18	41	43	P	48	30	P	44
Including natives.....	C	D	13	2	P	31	8	13	P	6	14	11	P	17	13	P	17
Swatow.....	C	D			P			2	P	2			P	1	1	P	8
Tientsin.....	C	D			P	1			P				P			P	2
Chosen (see table below).	C	D			P			1	P				P			P	
Colombia. Call.....	C	D			P			1	P				P			P	
Dutch East Indies: Batavia.....	C	D			P			1	P				P			P	
Egypt:	C	D			P				P				P			P	
Cairo.....	C	D			P				P				P			P	
Suez.....	C	D			P				P				P			P	
France (see table below).	C	D			P				P				P			P	
Germany: Ait-la-Chapelle.....	C	D			P				P				P			P	
Great Britain:	C	D			P				P				P			P	
England and Wales.....	C	D	161	220	P	216	44	32	P	54	68	68	P	55	49	P	73
London.....	C	D	38	129	P	118	16	14	P	38	40	24	P	22	18	P	38
London and Great Towns.....	C	D	128	179	P	191	31	22	P	43	56	60	P	45	37	P	53
Honduras: ?	C	D			P				P				P			P	
Cebu.....	C	D	14	1	P			1	P	1	1		P			P	1
Puerto Castilla.....	C	D			P	8			P				P			P	1
Teguigalpe.....	C	D			P				P				P			P	
Trujillo.....	C	D			P				P				P			P	
India:	C	D	1	1	P	1, 152	302	428	P	610	354	735	P			P	
Bassein.....	C	D	1, 451	1, 152	P	2, 298			P				P			P	
Bombay.....	C	D	224	246	P	1, 066	84	96	P	110	174	180	P			P	
Calcutta.....	C	D			P	1	2		P	1	3	1	P	3	1	P	5
Cochin.....	C	D			P	1	1	1	P	1	1	1	P	2	1	P	1
Karachi.....	C	D	1	1	P	1	1	1	P	1	3	3	P	10	9	P	23
Madras.....	C	D	8	5	P	1	5	2	P	1	2	2	P	12	9	P	11
Moulmein.....	C	D	13	5	P	7	1	2	P	3	1	1	P	2	1	P	3
Negapatam.....	C	D	2	2	P	2		1	P	1	1	1	P	3	2	P	2
Rangoon.....	C	D	2	1	P	1			P				P	2	1	P	1
Siam.....	C	D	1	1	P	1			P				P			P	
Siam.....	C	D	3	3	P	0	4	4	P	16	12	15	P	58	39	P	104
Siam.....	C	D	2	1	P	7	1		P	2	7	7	P	13	10	P	29

192 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan 1 to Feb. 18, 1932.

7 890 cases of smallpox with 15 deaths were reported in Honduras from July, 1931, to Feb. 16, 1932.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—															
	December, 1931				January, 1932				February, 1932				March, 1932			
	Sept. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	19	26	2	9	16	23	30	6	13	20	27	5	12
India—Continued.																
Tuticorin.....	4	5	8	2	2		2		19	9		9	5	15	7	
Visagapatnam.....	1	1							2			2	1	1	6	
India (French):																
Karikal.....	8	4	7			4				1						
Pondicherry Province.....	4	3	7			2				1						
Indo-China (see also table below):	23	33	26	10	7	1	4	4	11	4	13	8	4	4	4	
Phnompenh.....	21	36	25	10	7	1	4	4	6	4	13	8	4	4	4	
Saigon and Cholon.....									1			2				
Iraq:	6	7	26	13	8	3	8	23	23	43	23	39	46	33	28	54
Baghdad.....	8	5	12	9	6	2	7	18	22	35	17	24	23	23	15	48
Basra.....			11	3	4	4	4	5	2	2	1	2	1	1	1	1
			5	1	2	2	3	9	2	2	1	1	1	1		
Mosul Liwa.....							2		1	1						
Ivory Coast (see table below).	5															
Jamaica.....			1													
Japan:																
Kobe.....																
Taiwan.....																
Yokohama.....			1				1	2		20			55		1	
Mexico (see also table below):																
Chihuahua.....																
Jalisco (State)—Guadalajara.....	4	2	1	1			2	2	3	6	1	1	1	1	1	
Mexico City and surrounding territory.....	7	3	10	6								7	9	11		
Monterrey.....	4	2														
San Luis Potosi.....	4	2														
Turkey.....	1		7			1	1	2	1	2	1				6	1
Turcom.....						1	2	2		3	1	1	1	2	1	2
							2					1			2	1



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued**

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-vem-ber, 1931	December, 1931			January, 1932			February, 1932			March 1-10, 1932	
				1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-29		
Indo-China (see also table above)	C	30	47	120	144	41	324	11	107	191	145	206	309	230
Ivory Coast	D	13	16	22	17	21	55	11	52	85	47	98	86	109
Syria: Beirut	D			1										
	C							2	3					
Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-vem-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ruary, 1932	Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-vem-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ruary, 1932	
Chosen	9	7	2	1	1		Mexico (see also table above)	565	D	152	279	488	366	
France	1	1	6	1			Morocco	59	C					

## TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

[illegible]



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued**

## TYPHUS FEVER--Continued

[C indicates cases; D, deaths; P, present]

Week ended—														
Place	January, 1932					February, 1932					Mar. 5, 1932			
	December, 1931	January, 1932					February, 1932							
	19	20	2	9	16	23	30	6	13	20	27			
Union of South Africa:														
Cape Province.....	P	P	P	P	P	P	P	P	P	P				
Municipality of East London.....	P	P	P	P	P	P	P	P	P	P				
Natal.....	P	P	P	P	P	P	P	P	P	P				
Orange Free State.....	P	P	P	P	P	P	P	P	P	P				
Transvaal.....	P	P	P	P	P	P	P	P	P	P				
Venezuela: Caracas (see table below).														
Yugoslavia (see table below).														
On vessel: At Antofagasta, from Iquique and points north.....														





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—											
	December, 1931			January, 1932			February, 1932			March, 1932		
	19	26	2	9	16	23	30	6	13	20	27	5
Senegal:												
St. Louis												
Thies												
Sudan (French): Macina—Kayo Circle												
Togo (French): Atakpame—Anie Circle												
Upper Volta:												
Bandara												
Dedougou												
Diabakoto												
Ouagadougou												





UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES  
PUBLIC HEALTH SERVICE

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VOLUME 47    ::    ::    NUMBER 16

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APRIL 15 - - - - - 1932

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## SPECIAL ARTICLES

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Prevalence of Communicable Diseases in the United States  
Trachoma and Trachoma Prevention Activities in Missouri



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932

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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

The PUBLIC HEALTH REPORTS are intended primarily for distribution to health officers, members of boards or departments of health, and those directly or indirectly engaged in or connected with public health or sanitary work. Articles of general or special interest are issued as reprints from the PUBLIC HEALTH REPORTS or as supplements, and in these forms are available for general distribution to those desiring them.

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# PUBLIC HEALTH REPORTS

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VOL. 47

APRIL 15, 1932

NO. 16

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## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES<sup>1</sup>

February 23-March 26, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports, under the section entitled "Prevalence of Disease."

*Influenza.*—There were 36,368 cases of influenza reported for the 4-week period ended March 26, approximately 11,000 more cases than were reported for the preceding 4-week period. The current figure represents the highest reported incidence of influenza for this 4-week period in four years. For this period in the three preceding years the number of cases had dropped sharply from the preceding 4-week period. Weekly reports for 1932 indicate that although the peak incidence was later this year, it has probably been passed, possibly excepting the South Atlantic region (particularly South Carolina). In most regions the peak occurred in the latter half of February or the first half of March. In all six geographic regions the number of cases reported during the current period was far in excess of the number reported in the corresponding period of 1930, a year exceptionally free from influenza. In four of the six regions more cases were reported than in the corresponding period of 1931, but in the South Atlantic and West North Central States the numbers reported this year were less than were reported for the corresponding period of 1931.

*Measles.*—All sections of the country show a continued seasonal increase of measles during the current period, although the number of cases reported (49,223) for the country as a whole for the four weeks ended March 26 was the lowest in four years. A comparison of geographic areas shows that the situation in both the North and South Central groups of States was similar to that described for the country

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<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The numbers of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.



as a whole; in the New England and Middle Atlantic States, where the disease has been unusually prevalent, the incidence was about 15 per cent below the incidence for the corresponding period last year; a decrease of more than 50 per cent was reported from the South Atlantic States; and a 25 per cent drop was noted in the Mountain and Pacific States. In the New England and Middle Atlantic and the South Atlantic States the incidence was still considerably in excess of that of 1930 and 1929. In the Mountain and Pacific States the incidence was lower than for the same period in 1930, but was three times the incidence in 1929.

*Scarlet fever.*—The current period shows a slight increase in scarlet fever over the corresponding period in each of the three preceding years. For the four weeks ended March 26, the cases totaled 25,427, as against 24,192, 21,809, and 22,786 for the corresponding period in 1931, 1930, and 1929, respectively. The New England and Middle Atlantic States seemed mostly responsible for the increase. In that region the number of cases (14,460) is approximately 5,000 more than were reported for the same period in 1931 and almost double the number reported in 1930 and 1929. In the North and South Central areas the incidence was the lowest in four years. The incidence in the South Atlantic States was about normal.

*Smallpox.*—Smallpox maintained the relatively low level of the preceding 4-week period. In all regions except the New England and Middle Atlantic the number of cases reported for the current period was the lowest in four years. While the number of cases (48) in the New England and Middle Atlantic States was not large, it represented an increase of about 33 per cent over the incidence for the same period of last year. It was, however, considerably below the incidence in 1930 and 1929. For the entire country the number of cases for the current period was 1,413, as compared with 3,750, 6,502, and 4,470 for the same period of the years 1931, 1930, and 1929, respectively.

*Diphtheria.*—The total number of reported cases of diphtheria (3,971) for the current period was about the same as for the corresponding period of 1931, but was much lower than in 1930 and 1929. Two geographic areas, the South Central and Mountain and Pacific, show an increase over last year's figure. In the South Central area the incidence (645 cases) was the highest in four years. In the Mountain and Pacific area the number of cases was slightly above the number reported for the same period last year, but was close to the average for the three preceding years. Other regions very closely approximated last year's incidence.

*Meningococcus meningitis.*—Fewer cases of meningococcus meningitis were reported for the current 4-week period than have been reported for the corresponding period in four years. The number

of cases (296) was only about 43 per cent of the number reported for the same period last year and about 25 per cent of the number in 1930 and 1929. The low incidence was very general. In fact, each geographic area reported fewer cases for the current period than for the same period in four years.

*Poliomyelitis.*—The reported incidence of poliomyelitis showed a sharp decline from 130 cases during the preceding 4-week period to 62 for the current period. In relation to preceding years the current incidence was the lowest for this period in four years. All geographic areas except the South Atlantic either approximated the incidence for the same period last year or showed a decline. The number of cases reported from the South Atlantic area was small (10), but it was the highest number reported from that region in four years.

*Typhoid fever.*—The number of cases of typhoid fever reported for the current 4-week period was 693, as compared with 475, 734, and 711 for the corresponding period in the years 1931, 1930, and 1929, respectively. The disease was unusually prevalent in the East North Central, South Central, and South Atlantic regions. In the East North Central States the incidence for the current period (114 cases) was higher than in any of the past three years. In the South Atlantic and South Central regions the number of cases was twice the number reported for the same period last year but closely approximated the incidence in 1930 and 1929.

*Mortality, all causes.*—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, rose from 12.3 per 1,000 (annual basis) for the preceding 4-week period to 13.5 for the current period. In relation to previous years the current rate was approximately the same as for the corresponding period in 1931 and 1930. For this period in 1929 and 1928 the rate was 14.8 and 14.6, respectively. Mortality in these cities has been exceptionally low nearly all of this winter, and the rise during the past few weeks has brought the rates only up to about the comparatively low level of mortality of the corresponding weeks of 1930.

## TRACHOMA AND TRACHOMA PREVENTION WORK IN MISSOURI<sup>1</sup>

By C. E. RICE, *Passed Assistant Surgeon*, and J. E. SMITH, *Acting Assistant Surgeon, United States Public Health Service*

### HISTORY

Trachoma work by the United States Public Health Service, in cooperation with the Missouri State Board of Health, was begun in 1923, first by a series of survey clinics and then by the opening of a

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<sup>1</sup> Read before the Missouri State Medical Association Conference, Joplin, Mo., May 14, 1931.

trachoma hospital at Rolla. Here the severe and complicated cases of trachoma have been hospitalized. The holding of field clinics has been a much emphasized feature of the trachoma work in Missouri. These have usually been held in the spring, summer, and fall months. Field nurses have been utilized to work in the territory surrounding the chosen center. At times operative clinics have been held at the centers. At these operative clinics patients are usually held under observation for approximately seven days. It has been found by experience that the practice of operating on trachoma cases and allowing them to return home at once without further treatment has, at times, not given the desired results. It was observed that very few cases of real trachoma could be arrested by a grattage unless followed up by painstaking after treatment over a period of time.

#### PRESENT STUDY

This report is partly a study of the records of trachoma patients observed in Missouri from 1923 to 1930 and partly a study of the relationship between the total number of trachoma cases and the number of trachoma blind in this State.

#### AMOUNT AND LOCATION OF TRACHOMA IN MISSOURI

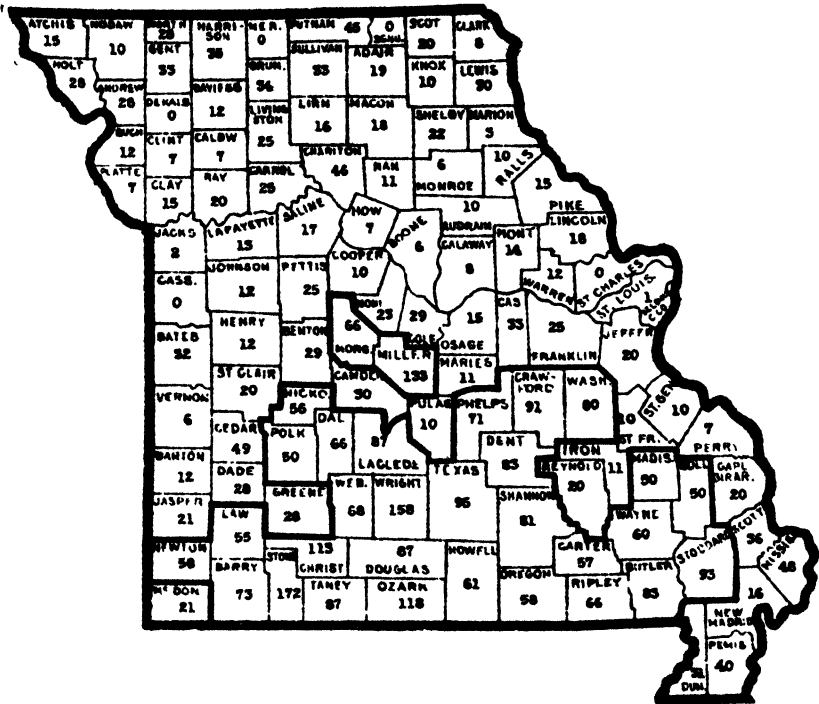
In the period mentioned, 3,893 individuals with trachoma have been seen in Missouri by our workers. Of this total number, 3,691 were found south of the Missouri River and only 202 cases north of the river. Of the 3,893 cases seen, 1,148 have been hospitalized one or more times at the hospital in Rolla. It must be understood that the total number represents active and inactive cases, as many of the individuals when first seen in clinics are apparently arrested cases. From experience it has been found, however, that many of these arrested, or "cured," cases may flare up again under unfavorable conditions, such as those found in dusty occupations.

#### RELATIONSHIP OF TRACHOMA BLINDNESS TO TOTAL TRACHOMA

The number of blind individuals is probably as accurately determined in Missouri as in any other State. This is due to the working of the blind pension law and the excellent administration of this law by the Missouri Blind Commission. For this reason the number of trachoma blind according to counties is fairly accurately known. Blindness as defined by the State legislature in the blind pension act is light perception or worse.

Map No. 1 is a rather arbitrary outline of the trachoma belt in Missouri. This map shows the incidence per 100,000 population of trachoma blind in each county of the State. Included in the trachoma belt are those counties having a trachoma blind prevalence of

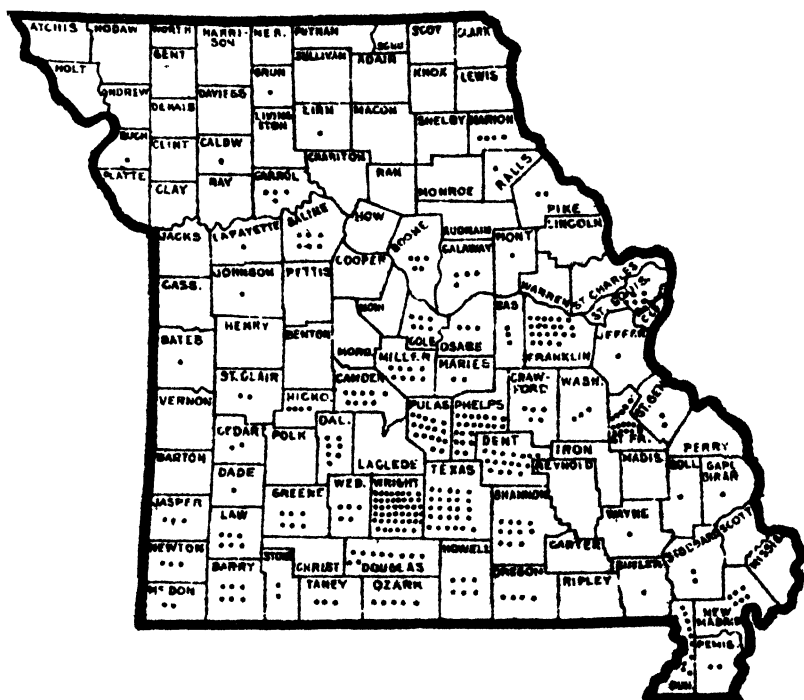
It is quite true that much more trachoma field work has been done in southern Missouri than in the northern part of the State. How-



MAP 1.—A somewhat arbitrary outline of the trachoma belt of Missouri, based on the incidence of trachoma blind in the respective counties. Only those counties are included which have an incidence of 50 or more trachoma blind to 100,000 population. The figures represent the trachoma blind incidence. (These figures are taken from data supplied by the State auditor's office)

Map No. 4 shows 15 counties in southern Missouri from which originated 52 per cent of the trachoma cases that we have seen. Within the large area are outlined three contiguous counties, Phelps, Wright, and Texas, in which there has been more intensive field

work by trachoma field nurses than in any other three counties in the State. It is believed, therefore, that we have come nearer locating all the cases of trachoma in these three counties than in any other county or counties in the State. The number of cases of trachoma seen in Phelps is 224; in Texas, 392; in Wright, 389; or a total of 1,005 cases in a population of 51,000—a prevalence rate of approximately 20 per 1,000. One-fourth of all the trachoma seen by us so far in Missouri has been seen in these three counties. In Phelps County there are 8 trachoma blind on the pension rolls; in Texas County, 9; and in Wright County 22.



MAP 2.—Map showing number of patients hospitalized, by counties, during the fiscal year 1930

In Phelps County the percentage of trachoma blind pensioners to the known trachoma cases is 3.7 per cent; in Texas County, 2.3 per cent; and in Wright County, 5.8 per cent. Taking the average of these three figures as being somewhat near correct, we have 3.9 as the per cent of trachoma blind pensioners to the total number of trachoma cases. There were 690 individuals blind from trachoma on the State pension rolls on September 1, 1930. If this number represents 3.9 per cent of all the trachoma cases in Missouri, then we must face the possibility that there are not less than 17,000 individuals in Missouri who have trachoma and that we have seen approximately 22 per cent of them.

## DATA FROM THE RECORDS OF TRACHOMA CASES

The age grouping of all trachoma cases seen and of 1,134 hospitalized is as follows:

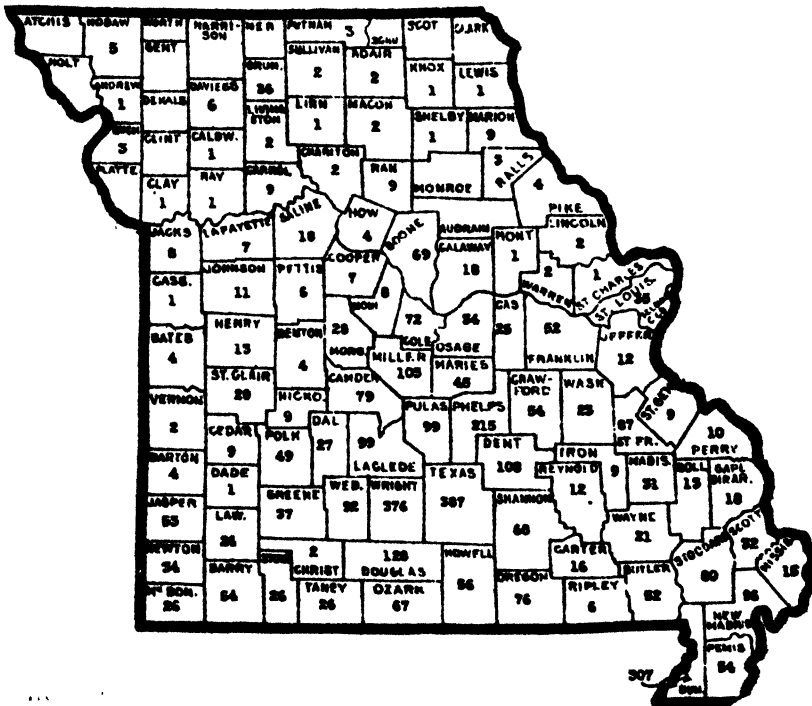
TABLE 1.—Age distribution of trachoma cases seen and of cases hospitalized in Missouri, 1923-1930

	All known ages	Under 10	10 to 19	20 to 29	30 to 39	40 to 49	50 and over
Number of cases seen.....	13,780	340	722	470	578	617	1,044
Number of cases hospitalized.....	1,134	116	301	186	158	148	225
Per cent of cases seen in each age group that were hospitalized.....	30.0	33.2	41.7	39.6	27.3	24.0	21.6

<sup>1</sup> 113 of total cases not classified.

<sup>2</sup> 14 hospitalized cases not classified.

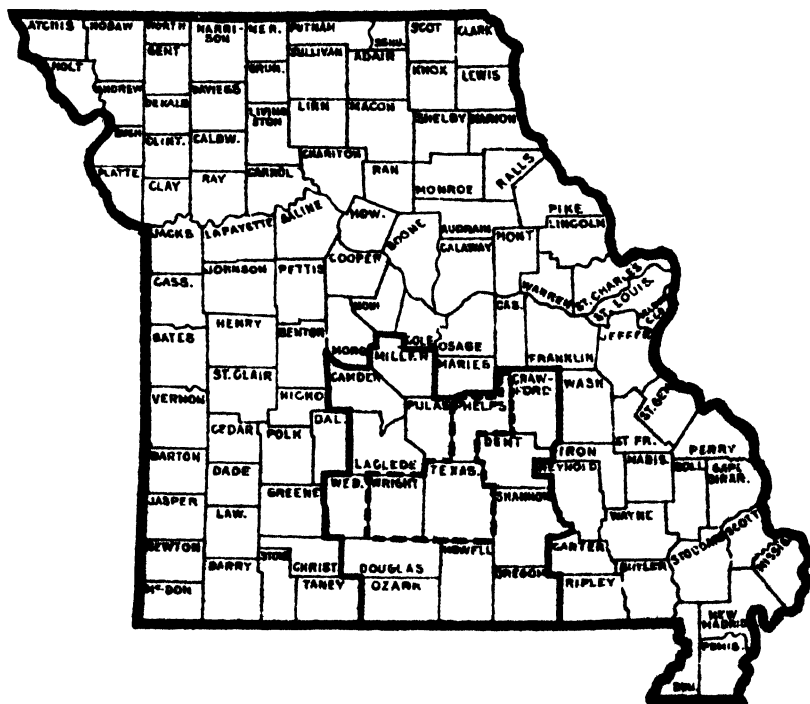
The largest age group hospitalized included persons from 10 to 19 years of age. Approximately 30 per cent of all the cases have been



MAP 3.—Map showing the actual number of trachoma cases seen in the respective counties from 1923 to September, 1930, by the cooperative trachoma eradication units. Many of the trachoma individuals seen in the southeastern county showing 307 trachoma cases are from Arkansas. The total number of trachoma cases seen was 3,893

hospitalized. However, not all those needing it have been hospitalized. The fact is also well illustrated in this table that where real trachoma exists, its presence should be manifest in all decades of life.

Of the trachoma cases seen in Missouri, 65 per cent have been males. They outnumber the females almost 2 to 1. This may be partly explained by the fact that the women are more timid about submitting to examination. But even after taking this factor into account the preponderance of males may be an epidemiological factor of some importance. Possibly women may be more careful in their personal hygiene.



MAP 4.—In the 15 counties outlined by the heavy solid line, 2,009 cases of trachoma have been seen, or 52 per cent of the total. Within the three counties outlined by the heavy dotted line in the center of this group, 1,005 cases of trachoma have been seen in a population of 51,000. It is within these last three counties that the most intensive trachoma work has been done.

Approximately 77 per cent have been hospitalized only once, 15 per cent have been hospitalized twice, and only 7.1 per cent three or more times.

The age grouping of cases hospitalized three or more times was as follows: 11 per cent under 10 years of age; 22 per cent in the 10 to 19 age group; 29.3 per cent in the 20 to 29 age group; 9.8 per cent in the 30 to 39 age group; 15.8 per cent in the 40 to 49 age group; and 12.2 per cent were over 50 years of age.

Nearly all of the frequent repeaters show marked corneal trachoma, even heavy active pannus in the presence of an inactive lid. They have frequently occurring ulcers, and some have a trachomatous keratitis. It is such a type of trachoma that produces blindness.

There were 2,208 operations performed as follows:

Entropion.....	699
Canthoplasty.....	219
Grattage.....	1,202
Others.....	88

<sup>1</sup> Some more than once.

Under the heading "others," only a few tarsectomies are listed. It is our observation that better results can be obtained with a thoroughly performed canthoplasty than with a tarsectomy.

The average number of days in the hospital for those admitted only once was 27.6 days, for those admitted twice 56.6 days for both admissions, and for those admitted three times a total of 161 days. A small group of five patients proved to be very refractory to treatment. These cases were not on constant local treatment but were frequently allowed periods of rest when only the diet was emphasized and mild eye irrigations.

The age distribution of the grattage cases and entropion cases is as follows:

TABLE 2.—Age distribution of cases of grattage and of entropion

	All known cases	Under 10	10 to 19	20 to 29	30 to 39	40 to 49	50 and over
Number of cases:							
Grattage.....	1,050	219	424	156	167	68	85
Entropion.....	653	3	19	71	136	163	261
Per cent of cases:							
Grattage.....	100.0	20.7	40.0	14.7	10.1	6.4	8.0
Entropion.....	100.0	5	2.9	10.9	20.8	25.0	40.0

Table 3 presents a summary showing by age groups the number of individuals seen with vision of 20/100 or worse in both eyes as a result of trachoma. This total number was 673, or 17 per cent of the number of trachoma cases seen. There were 488 individuals seen with vision of 20/200 or worse in both eyes from trachoma.

TABLE 3.—Age distribution of trachoma cases with very poor vision in both eyes

	All known ages	Under 10	10 to 19	20 to 29	30 to 39	40 to 49	50 and over
Number of cases:							
20/100 or worse in both eyes.....	673	12	70	71	103	128	269
20/200 or worse in both eyes.....	488	3	44	53	65	91	232
Percentage distribution:							
20/100 or worse in both eyes.....	100.0	1.8	10.4	10.6	15.3	19.0	42.9
20/200 or worse in both eyes.....	100.0	.6	9.0	10.9	13.3	18.6	47.5



The figures reveal that 12.5 per cent of all trachoma cases seen so far in this State have vision of 20/200 or worse in both eyes, and they also show that trachoma can cause considerable vision damage in the early years of life.

Of 1,154 unselected complete records studied, pannus was observed in one or both eyes at the first examination in 88 per cent of the cases. The age distribution of patients showing pannus was as follows:

TABLE 4.—*Age distribution of trachoma cases with pannus*

	All known ages	Under 10	10 to 19	20 to 29	30 to 39	40 to 49	50 and over
Number of cases.....	1,022	47	155	130	165	181	344
Percentage of cases.....	100.0	4.6	15.2	12.7	16.1	17.7	33.7

The records show 12 cases of unilateral trachomatous involvement, summarized in Table 5.

TABLE 5.—*Data relating to 12 cases of unilateral trachomatous involvement*

Sex	Age	Duration	Eye involved	Operations during that period	Vision	
					Right eye	Left eye
Female.....	20	Years 3	Right.....	4 grattages.....	20/200	20/20
Male.....	20		Left.....	1 grattage.....	20/20	20/100
Female.....	22		do.....	do.....	20/20	Fingers 12"
Male.....	9	2	Right.....	2 grattages.....	20/50	20/20
Do.....	42	7	Left.....	Thermaphore to ulcer.....	20/30	Shadows.
Do.....	21	1	Right.....	1 grattage.....	8/200	20/20
Do.....	29	5	Left.....	do.....	20/20	4/200
Do.....	30	16	do.....	Entropion left eye.....	20/20	20/200
Do.....	20	Unknown	Right.....	1 grattage.....	20/100	20/20
Do.....	12		do.....	do.....	5/100	20/20
Do.....	30		Left.....	do.....	20/20	20/100
Do.....	54	3	Right.....	2 grattages.....	Shadows.	20/30

#### RATIO BETWEEN TRACHOMA AND BLINDNESS

Considering that there are 17,000 cases of trachoma in Missouri now, and if the percentage of severely damaged corneas holds at 12.5 per cent, then there are 2,125 individuals approaching partial or total blindness from trachoma in that State at the present time. Of the estimated 17,000 cases of trachoma in Missouri, 3.9 per cent are blind having light perception or worse and are drawing blind pensions. This means that in Missouri there is one trachoma blind individual for each 26 cases of trachoma, or for each trachoma blind individual there are 26 trachoma cases.

## ARRESTING THE DISEASE IN INDIVIDUAL CASES

There will naturally arise the question as to what percentage of trachoma cases are being "cured." As before stated, it is inadvisable to use the word "cured" as applied to trachoma. "Arrested" is a better word; for many relapses are seen. Of 1,148 hospital records here reviewed, 7.1 per cent were hospitalized three or more times. Corneal trachoma, often without lid reactivity, is a frequent cause of relapse. However, the 77 per cent of cases hospitalized only once indicates strongly that the majority of the cases are arrested with only one period of hospitalization. The progress of the disease toward total or partial blindness is arrested in a large majority of cases, and in many instances much vision is restored. It should be remembered that only the complicated or very virulent cases find their way into the hospital, many other cases being arrested with very little or no treatment and with little resultant damage to vision. Many others become arrested cases by treatment in the field clinics.

## CONCLUSIONS

1. The incidence of trachoma in Missouri seems much higher in the southern part of the State than in the north.
2. One area in southern Missouri of 2,506 square miles shows a trachoma incidence rate of almost 20 per 1,000.
3. The probable percentage of trachoma blind in Missouri under the present legislative definition of blindness is 3.9 per cent of the total number of trachoma cases.
4. Of 3,893 trachoma cases seen, 65 per cent are males.
5. Of 1,154 complete records studied 88 per cent showed the presence of pannus involvement of the cornea.
6. There was corneal damage sufficient to bring vision down to 20/200 or worse in both eyes in 12.5 per cent of all cases seen.
7. Of 1,148 individuals hospitalized at Rolla, 7.1 per cent have been hospitalized three or more times.
8. It is estimated that there are 17,000 active and inactive cases of trachoma in Missouri at the present time.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Law requiring tuberculin testing of cattle upheld.*—(Washington Supreme Court; *Hacker v. Barnes, Director of Agriculture, et al.*, 7 P. (2d) 607; decided Feb. 9, 1932.) Chapter 165, Laws 1927, as amended by chapter 210, Laws 1929, among other things, made it the duty of the State director of agriculture to cause all bovine animals within the State to be examined and tested to ascertain whether or not they were infected with tuberculosis, and vested the director with authority to quarantine the premises of the owner of any bovine animal upon such owner's refusal to have his cattle tuberculin tested.

The plaintiff, an owner of dairy cattle, refused to permit the defendants, the State director of agriculture and certain other State officials, to subject his cattle to the tuberculin test. The plaintiff's cattle were thereupon quarantined, and the plaintiff sought to enjoin the defendants from interfering with his milk business by quarantining his herd. He alleged that the law involved was unconstitutional, contending (1) that it constituted an arbitrary and unreasonable exercise of the police power of the State; (2) that it vested arbitrary and unreasonable power in the State director of agriculture, because it provided for the director's approval of a private veterinarian selected by an owner for the purpose of testing his cattle; (3) that it was vague and indefinite; and (4) that the title of the act was insufficient because not broad enough to cover all of the act's provisions. In connection with these propositions, the plaintiff argued that, under the act, his property was taken or damaged without due process of law and that the statute unlawfully attempted to delegate legislative power to the director of agriculture.

The supreme court rejected these contentions and declared that it was "clearly of the opinion that the statute here under attack constitutes a valid exercise by the legislature of the police power of the State."

## DEATHS DURING WEEK ENDED MARCH 26, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended March 26, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Mar. 26, 1932	Correspond- ing week, 1931
Policies in force.....	73, 749, 858	75, 075, 351
Number of death claims.....	14, 302	16, 129
Death claims per 1,000 policies in force, annual rate.....	10. 1	11. 2
Death claims per 1,000 policies, first 12 weeks of year, annual rate.....	10. 2	11. 3

*Deaths from all causes in certain large cities of the United States during the week ended March 26, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 26, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 12 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	9,474	13.5	685	57	13.5	836	12.6	14.1
Akron.....	32	6.3	5	62	7.9	5	8.0	8.6
Albany.....	47	18.8	2	41	16.6	2	14.9	15.5
Atlanta.....	73	13.5	8	78	13.1	5	14.3	16.5
White.....	37	10.3	2	29	10.2	4	11.2	13.4
Colored.....	36	19.7	6	172	19.0	1	20.5	22.7
Baltimore.....	264	16.8	16	57	15.9	23	14.9	17.7
White.....	206	16.1	9	41	14.5	16	13.8	16.3
Colored.....	58	20.2	7	113	22.4	7	19.8	23.7
Birmingham.....	61	11.5	4	42	17.0	9	12.4	15.6
White.....	27	8.2	1	16	13.1	7	10.2	11.9
Colored.....	34	16.9	3	81	23.4	2	15.9	21.2
Boston.....	269	17.8	31	94	14.5	16	15.5	16.6
Bridgeport.....	26	9.2	0	0	9.6	1	12.2	13.3
Buffalo.....	196	17.4	20	96	17.6	27	18.9	15.7
Cambridge.....	29	13.2	0	0	13.7	1	14.2	13.9
Camden.....	40	17.5	3	53	18.0	6	15.5	18.5
Canton.....	30	14.5	4	100	7.3	1	10.8	11.2
Chicago.....	717	10.6	50	49	11.2	62	11.1	12.1
Cincinnati.....	194	21.9	6	39	17.1	12	17.0	18.3
Cleveland.....	268	15.2	9	29	13.7	21	11.9	12.7
Columbus.....	73	12.7	8	80	20.3	6	14.8	15.2
Dallas.....	62	11.5	8	.....	13.7	.....	11.7	12.6
White.....	43	9.6	7	.....	10.6	5	11.0	11.0
Colored.....	19	20.4	1	.....	28.6	2	15.1	20.4
Dayton.....	61	13.4	4	57	11.7	1	12.1	12.6
Denver.....	79	14.0	7	69	16.4	8	17.1	16.0
Des Moines.....	40	14.3	5	86	12.3	0	12.1	12.7
Detroit.....	274	8.3	31	56	10.4	39	8.7	9.9
Duluth.....	13	6.7	1	29	9.7	2	10.0	12.0
El Paso.....	34	10.6	5	.....	17.4	1	15.2	17.9
Erie.....	37	10.2	4	85	17.7	1	12.2	11.8
Evansville.....	22	10.0	0	0	15.5	2	10.3	12.2
Fall River.....	31	14.1	3	80	17.1	7	13.2	14.0
Flint.....	28	8.6	3	44	8.9	3	8.9	8.1
Fort Wayne.....	33	14.2	2	32	14.5	0	11.1	12.1
Fort Worth.....	42	12.9	4	.....	12.5	3	10.9	11.9
White.....	36	13.1	4	.....	11.5	3	10.6	11.4
Colored.....	6	11.7	0	.....	17.3	0	12.9	14.5
Grand Rapids.....	41	12.3	3	51	7.6	3	9.8	9.9
Houston.....	67	10.8	1	.....	13.0	4	11.6	11.9
White.....	43	9.4	1	.....	11.7	3	10.3	11.0
Colored.....	24	14.6	0	.....	16.3	1	12.7	14.6
Indianapolis.....	116	16.3	9	73	17.5	5	14.3	15.7
White.....	100	15.9	7	64	17.0	4	13.7	15.2
Colored.....	16	18.1	2	137	20.8	1	14.0	19.8
Jersey City.....	90	14.7	6	50	13.1	15	12.0	13.9
Kansas City, Kans.....	32	13.5	3	66	10.2	2	13.5	14.2
White.....	22	11.5	2	54	11.0	1	13.1	14.8
Colored.....	10	22.1	1	128	6.7	1	15.3	22.0
Kansas City, Mo.....	140	13.8	9	102	13.4	9	13.2	15.6
Knoxville.....	46	21.5	9	228	14.3	6	12.9	14.7
White.....	36	20.1	7	195	14.8	6	11.9	13.6
Colored.....	10	79.6	2	539	11.7	0	17.9	20.3
Long Beach.....	25	8.1	0	0	11.6	2	10.6	10.6
Los Angeles.....	289	10.9	22	65	10.7	27	12.1	11.8
Louisville.....	70	11.9	3	27	10.0	4	14.4	17.8
White.....	53	10.6	3	31	8.4	2	12.7	15.9
Colored.....	17	18.6	0	0	18.6	2	23.6	28.3
Lowell.....	30	15.6	1	26	16.1	3	14.7	15.2
Lynn.....	35	12.7	1	28	11.2	2	12.2	12.9
Memphis.....	43	18.5	1	11	22.2	0	16.9	17.9
White.....	49	15.7	1	17	17.3	2	13.0	15.1
Colored.....	44	22.8	0	0	30.1	7	28.4	32.5
Miami.....	30	13.8	4	112	18.1	5	12.9	14.8
White.....	21	12.4	2	78	16.7	2	12.0	14.1
Colored.....	9	18.6	2	201	22.7	3	15.7	17.3
Milwaukee.....	92	8.0	10	48	12.6	21	9.6	11.0
Minneapolis.....	99	10.7	14	91	13.7	8	11.6	12.6

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended March 26, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Mar. 26, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 12 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Nashville <sup>4</sup> .....	43	14.3	5	75	18.4	7	15.1	18.5
White.....	28	12.8	3	59	15.3	7	14.4	16.1
Colored.....	15	18.3	2	125	16.8	0	17.0	24.8
New Bedford.....	41	19.0	4	115	13.0	2	13.6	13.3
New Haven.....	55	17.7	1	20	13.8	0	13.3	13.8
New Orleans <sup>5</sup> .....	166	18.3	11	63	18.7	14	16.1	19.5
White.....	102	15.8	8	70	16.5	10	13.5	16.1
Colored.....	64	24.4	3	49	24.4	4	22.2	28.1
New York.....	1,911	13.8	137	61	12.4	156	12.0	13.7
Bronx Borough.....	255	9.6	16	46	9.3	22	9.0	9.9
Brooklyn Borough.....	673	13.1	48	53	11.4	67	11.2	12.8
Manhattan Borough.....	720	21.2	61	87	19.5	54	18.2	20.8
Queens Borough.....	210	9.1	11	46	7.0	11	7.7	8.9
Richmond Borough.....	53	16.5	1	20	12.8	2	14.9	14.4
Newark, N. J.....	107	12.5	6	33	11.6	14	11.9	13.9
Oakland.....	60	10.5	2	25	11.2	4	11.7	12.1
Oklahoma City.....	48	12.2	1	14	10.6	7	10.5	11.8
Omaha.....	65	15.5	2	23	17.6	4	15.4	14.9
Paterson.....	41	15.4	3	54	18.4	4	13.6	16.7
Peoria.....	27	12.7	2	55	11.1	3	12.9	13.9
Philadelphia.....	360	15.6	39	60	15.4	62	13.4	16.4
Pittsburgh.....	178	13.5	14	64	17.4	19	15.2	18.2
Portland, Oreg.....	69	11.6	1	13	12.2	3	12.6	13.0
Providence.....	90	18.4	12	116	11.9	6	15.3	15.5
Richmond <sup>6</sup> .....	50	14.1	2	30	17.5	5	14.9	18.2
White.....	29	11.4	0	0	14.3	3	12.5	15.3
Colored.....	21	20.8	2	92	25.6	2	21.2	25.5
Rochester.....	94	11.7	10	95	14.1	5	12.7	14.1
St. Louis.....	287	18.0	14	50	17.8	24	14.5	18.6
St. Paul.....	63	11.8	4	43	13.4	4	11.2	11.9
Salt Lake City <sup>7</sup> .....	31	11.2	2	31	15.3	5	12.1	12.9
San Antonio.....	70	14.4	8	—	15.6	7	15.1	15.3
San Diego.....	46	14.7	2	43	14.7	2	16.6	15.6
San Francisco.....	143	11.3	4	28	13.2	4	14.1	14.7
Schenectady.....	20	10.8	2	58	15.2	2	11.3	12.3
Seattle.....	78	10.8	2	20	13.5	3	12.4	13.3
Somerville.....	25	12.3	1	40	5.0	0	10.0	11.4
South Bend.....	9	4.2	4	116	10.6	1	8.9	9.4
Spokane.....	29	13.0	2	53	11.7	2	12.8	13.2
Springfield, Mass.....	38	12.9	3	51	9.2	1	12.0	13.9
Syracuse.....	66	16.0	3	39	11.3	7	12.2	13.0
Tacoma.....	31	14.9	0	0	12.6	4	12.5	15.1
Tampa <sup>8</sup> .....	31	15.0	0	0	14.9	2	12.7	13.1
White.....	23	14.1	0	0	14.5	1	12.4	13.8
Colored.....	8	18.3	0	0	16.4	1	13.8	20.0
Toledo.....	66	11.5	7	76	15.4	10	13.2	13.9
Trenton.....	47	19.8	2	40	21.9	6	16.6	19.5
Utica.....	29	14.2	3	88	15.8	2	15.7	16.6
Washington, D. C. <sup>9</sup> .....	200	21.2	13	73	19.9	17	17.4	18.9
White.....	133	19.5	6	49	17.7	9	15.8	16.4
Colored.....	67	25.6	7	125	25.5	8	21.5	23.4
Waterbury.....	22	11.3	5	165	11.9	3	10.3	11.4
Wilmington, Del. <sup>10</sup> .....	38	18.6	4	90	16.6	5	17.7	16.8
Worcester.....	56	14.7	2	28	13.0	2	13.7	15.2
Yonkers.....	28	10.3	3	77	10.9	3	8.0	11.0
Youngstown.....	59	17.6	4	66	9.7	3	11.1	11.9

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetic method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 22; Nashville, 22; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930, decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended April 2, 1932, and April 4, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 2, 1932, and April 4, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931
<b>New England States</b>								
Maine		4	204	13	194	64	2	0
New Hampshire					1	54	0	0
Vermont		1			110	1	0	0
Massachusetts	46	23	15	9	660	461	2	1
Rhode Island	6	3	1	4	202	31	1	0
Connecticut	3	5	58	9	181	542	1	0
<b>Middle Atlantic States</b>								
New York	94	107	113	52	2,314	2,244	13	14
New Jersey	29	43	89	8	352	771	3	2
Pennsylvania	119	77			2,203	3,764	11	14
<b>East North Central States</b>								
Ohio	59	47	360	61	2,740	500	10	4
Indiana	19	29	272	57	73	1,341	12	13
Illinois	61	122	126	71	489	1,647	9	22
Michigan	24	28	52	21	1,098	119	8	6
Wisconsin	8	11	576	102	1,159	571	2	4
<b>West North Central States</b>								
Minnesota	12	12	1	2	40	61	2	1
Iowa	11	2			3	30	1	1
Missouri	32	21	31	58	65	400	1	14
North Dakota	4	9			9	37	1	1
South Dakota	6	5	5	1	19	62	3	0
Nebraska	10	9	6	8	4	9	2	0
Kansas	18	7	10	7	344	30	0	4
<b>South Atlantic States</b>								
Delaware	1		6	2		170	0	0
Maryland	12	15	313	33	17	1,226	2	5
District of Columbia	11	7	32	4	3	327	2	4
Virginia							1	
West Virginia	17	18	335	87	414	114	2	1
North Carolina	19	28	162	92	565	939	2	2
South Carolina	7	17	2,081	1,364	38	121	0	4
Georgia	8	5	177	706	14	136	1	2
Florida	6	8	14	10	5	171	0	0
<b>East South Central States</b>								
Kentucky	19		788		85	188	2	4
Tennessee	10	4	837	186	213	202	3	1
Alabama	18	15	537	451	5	441	1	10
Mississippi	3	16					0	0

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended April 2, 1932, and April 4, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931
<b>West South Central States</b>								
Arkansas.....	8	5	252	307	3	50	0	1
Louisiana.....	19	22	36	48	236	4	0	2
Oklahoma.....	19	6	388	113	13	45	3	0
Texas.....	35	26	247	72	32	98	0	0
<b>Mountain States</b>								
Montana.....	1	4	3		178	2	1	3
Idaho.....	2	1	1	18		5	0	0
Wyoming.....	1	1	1		7	3	1	0
Colorado.....	5	10			118	273	3	0
New Mexico.....	6	4	2	17	53	69	0	1
Arizona.....	1	3	46	145	3	71	0	1
Utah.....	2	1		4	2	3	0	0
<b>Pacific States</b>								
Washington.....		5	3	5	523	56	1	1
Oregon.....	3	5	94	130	214	65	0	1
California.....	59	57	91	134	658	1,273	3	16
<b>Total</b>	<b>862</b>	<b>852</b>	<b>8,395</b>	<b>4,411</b>	<b>15,729</b>	<b>19,091</b>	<b>112</b>	<b>154</b>
Division and State	Polymyellitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931
<b>New England States</b>								
Maine.....	0	2	31	20	0	0	1	0
New Hampshire.....	0	1	29	1	0	0	0	0
Vermont.....	0	0	4	2	4	0	0	0
Massachusetts.....	2	2	520	302	0	0	1	4
Rhode Island.....	0	0	52	58	0	0	0	0
Connecticut.....	0	0	99	59	1	0	0	0
<b>Middle Atlantic States</b>								
New York.....	0	2	1,527	970	3	3	6	9
New Jersey.....	1	0	313	270	0	0	3	2
Pennsylvania.....	2	0	1,190	599	0	0	8	8
<b>East North Central States</b>								
Ohio.....	1	0	557	700	29	90	1	8
Indiana.....	1	1	199	353	5	111	0	7
Illinois.....	1	1	335	560	6	60	9	4
Michigan.....	1	1	492	202	10	9	10	3
Wisconsin.....	2	0	93	144	3	3	1	1
<b>West North Central States</b>								
Minnesota.....	0	2	110	94	3	1	1	4
Iowa.....	1	0	74	78	11	63	1	1
Missouri.....	0	0	73	398	2	31	2	0
North Dakota.....	0	0	14	22	6	7	2	0
South Dakota.....	0	0	11	31	7	17	2	0
Nebraska.....	0	1	36	52	11	46	0	0
Kansas.....	1	1	58	42	14	124	0	0
<b>South Atlantic States</b>								
Delaware.....	0	0	20	41	0	0	0	0
Maryland.....	0	0	132	85	0	0	3	4
District of Columbia.....	0	0	32	23	0	0	1	0
Virginia.....	1							
West Virginia.....	1	0	44	39	1	22	6	5
North Carolina.....	0	1	58	42	1	2	3	4
South Carolina.....	0	1	11	8	0	6	7	5
Georgia.....	0	0	10	71	0	0	24	3
Florida.....	1	0	9	7	0	2	2	0
<b>East South Central States</b>								
Kentucky.....	0	0	128	108	2	3	11	3
Tennessee.....	0	0	50	39	41	4	5	2
Alabama.....	0	0	19	36	18	11	3	9
Mississippi.....	0	0	17	22	29	92	4	4

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 2, 1932, and April 4, 1931—Continued*

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931	Week ended Apr. 2, 1932	Week ended Apr. 4, 1931
<b>West South Central States:</b>								
Arkansas.....	0	0	3	21	19	14	0	2
Louisiana.....	0	0	12	18	3	28	14	3
Oklahoma <sup>1</sup> .....	0	1	20	31	61	117	4	3
Texas <sup>1</sup> .....	0	0	53	45	37	39	3	0
<b>Mountain States:</b>								
Montana.....	0	0	36	25	0	3	0	1
Idaho.....	0	0	6	7	1	1	1	0
Wyoming.....	0	0	7	23	4	1	1	4
Colorado.....	0	0	39	41	0	0	1	0
New Mexico.....	0	0	11	2	0	4	0	1
Arizona.....	0	0	13	4	0	1	1	2
Utah <sup>2</sup> .....	0	0	6	5	0	0	0	0
<b>Pacific States:</b>								
Washington.....	1	0	26	55	25	46	3	2
Oregon.....	0	0	13	13	9	25	0	1
California.....	4	2	152	110	15	26	8	6
<b>Total</b> .....	21	19	6,724	5,736	381	1,012	153	115

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Apr. 2, 1932, 15 cases; 1 case in North Carolina, 7 cases in Georgia, 1 case in Florida, 3 cases in Alabama, and 3 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Men- gococ- cus menin- gitis	Diph- theria	Influenza	Malaria	Measles	Pella- gra	Polio- myelitis	Scarlat fever	Small- pox	Ty- phoid fever
<i>February, 1932</i>										
Alabama.....	6	114	297	30	8	15	4	89	11	40
California.....	23	278	1,250	1	1,642	1	11	584	50	25
Nevada.....		1	11		2		0	12	0	0
Oklahoma <sup>1</sup> .....	6	101	4,153	28	72	16	0	125	42	14
South Dakota.....	1	20	2,750		243		0	50	47	5
Texas.....	3	242	678	282		1	0	266		25
Virginia.....	3	228	5,409	18	310	18	1	300	0	49
Washington.....	6	15	420		2,425		3	161	76	3
West Virginia.....	1	85	566		1,738		0	189	3	24
Wisconsin.....	5	76	1,801		988		2	449	27	3
<i>March, 1932</i>										
Tennessee.....	7	52	6,470	10	600	20	1	115	71	36

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.



## February, 1932

	Cases
<b>Anthrax:</b>	
California.....	1
<b>Chicken pox:</b>	
Alabama.....	150
California.....	3,283
Nevada.....	5
Oklahoma <sup>1</sup> .....	54
South Dakota.....	39
Virginia.....	543
Washington.....	359
West Virginia.....	184
Wisconsin.....	1,463
<b>Diarrhea and dysentery:</b>	
Virginia.....	77
<b>Dysentery:</b>	
California (amebic).....	4
California (bacillary).....	5
Oklahoma <sup>1</sup> .....	3
<b>Food poisoning:</b>	
California.....	51
<b>German measles:</b>	
California.....	57
Washington.....	61
Wisconsin.....	46
<b>Granuloma, coccidioides:</b>	
California.....	3
<b>Hookworm disease<sup>2</sup></b>	
California.....	1
<b>Impetigo contagiosa</b>	
Oklahoma <sup>1</sup> .....	1
Washington.....	1
<b>Jaundice (epidemic):</b>	
California.....	5
<b>Leprosy:</b>	
California.....	1
<b>Lethargic encephalitis</b>	
California.....	3
Texas.....	1
Washington.....	1
Wisconsin.....	7
<b>Mumps:</b>	
Alabama.....	101
California.....	562
Oklahoma <sup>1</sup> .....	48
South Dakota.....	68
Washington.....	97
West Virginia.....	146
Wisconsin.....	1,342
<b>Ophthalmia neonatorum:</b>	
California.....	5
Oklahoma <sup>1</sup> .....	1
Wisconsin.....	2
<b>Paratyphoid fever:</b>	
California.....	2
Texas.....	1
<b>Psittacosis:</b>	
California.....	2

	Cases
<b>Rabies in animals:</b>	
California.....	40
<b>Scabies:</b>	
Oklahoma <sup>1</sup> .....	7
<b>Septic sore throat:</b>	
California.....	5
Oklahoma <sup>1</sup> .....	24
<b>Tetanus:</b>	
California.....	5
<b>Trachoma:</b>	
California.....	10
Oklahoma <sup>1</sup> .....	3
South Dakota.....	1
<b>Trichinosis:</b>	
California.....	2
<b>Tularaemia:</b>	
Oklahoma <sup>1</sup> .....	1
Virginia.....	9
<b>Typhus fever:</b>	
Alabama.....	7
Virginia.....	1
<b>Undulant fever:</b>	
Alabama.....	3
California.....	6
Oklahoma <sup>1</sup> .....	1
Virginia.....	6
Washington.....	2
<b>Vincent's angina:</b>	
Oklahoma <sup>1</sup> .....	1
<b>Whooping cough:</b>	
Alabama.....	83
California.....	701
Nevada.....	2
Oklahoma <sup>1</sup> .....	86
South Dakota.....	21
Virginia.....	1,671
Washington.....	141
West Virginia.....	312
Wisconsin.....	880

## March, 1932

<b>Tennessee</b>	
Chicken pox.....	189
Dysentery.....	2
German measles.....	116
Impetigo contagiosa.....	4
Lethargic encephalitis.....	2
Mumps.....	121
Ophthalmia neonatorum.....	4
Puerperal septicaemia.....	1
Scabies.....	1
Septic sore throat.....	5
Trachoma.....	56
Tularaemia.....	1
Undulant fever.....	1
Vincent's angina.....	1
Whooping cough.....	364

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.<sup>2</sup> Correction: 13 cases of hookworm disease published in Public Health Reports for Apr. 9, 1932, p. 861, as reported from Illinois should have been recorded as being reported from Louisiana.

**PATIENTS IN INSTITUTIONS FOR FEEBLE-MINDED, APRIL-JUNE, 1930**

Reports for the second quarter of the year 1930 were received by the Public Health Service from 31 institutions for the care of the feeble-minded, located in 26 States and the Territory of Hawaii. The total number of persons in these institutions on June 30, 1930, including those on temporary leave or otherwise absent but still on the books, was 34,947.

The first admissions were as follows:

	Male	Female	Total
April.....	170	167	337
May.....	162	149	311
June.....	183	169	352
Total.....	515	485	1,000

Of the first admissions during the three months 51.5 per cent were males and 48.5 per cent females, the ratio being 106 males per 100 females.

One hundred and thirty-three male patients and 100 female patients died during the three months. The annual death rates based on the number of patients on the books June 30, 1930, were: Males, 29.9 per 1,000; females, 23.4 per 1,000; persons, 26.7 per 1,000. Two hundred and forty male patients and 168 female patients were discharged during the three months.

The following table shows the number of patients in the institutions and on temporary leave on April 1, 1930, and at the end of each month of the second quarter of 1930, and the percentages of the total patients who were on leave:

	Apr 1, 1930	Apr. 30, 1930	May 31, 1930	June 30, 1930
<b>Patients in institutions:</b>				
Male .....	15,010	15,017	14,998	14,760
Female.....	15,063	15,057	15,054	14,906
Total .....	30,013	30,074	30,052	29,666
<b>Patients on temporary leave:</b>				
Male .....	2,674	2,725	2,807	3,064
Female.....	1,901	1,948	2,017	2,217
Total .....	4,575	4,673	4,824	5,281
<b>Total patients on books:</b>				
Male .....	17,684	17,742	17,805	17,824
Female.....	16,904	17,005	17,071	17,123
Total .....	34,588	34,747	34,876	34,947
<b>Per cent of patients on temporary leave:</b>				
Male .....	15.1	15.4	15.8	17.2
Female.....	11.2	11.5	11.8	12.9
Total .....	13.2	13.4	13.8	15.1

## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,925,000. The estimated population of the 90 cities reporting deaths is more than 32,435,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended March 26, 1932, and March 28, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	850	1,010	
96 cities.....	337	494	761
Measles:			
45 States.....	11,918	10,589	
96 cities.....	4,717	7,754	
Meningococcus meningitis:			
46 States.....	65	163	
96 cities.....	30	78	
Poliomyelitis.			
46 States.....	12	14	
Scarlet fever:			
46 States.....	6,070	5,931	
96 cities.....	3,102	2,581	1,625
Smallpox:			
46 States.....	316	909	
96 cities.....	27	107	63
Typhoid fever:			
46 States.....	171	134	
96 cities.....	35	24	27
<i>Deaths reported</i>			
Influenza and pneumonia.			
90 cities.....	1,423	1,270	
Smallpox			
90 cities.....	0	0	

## City reports for week ended March 26, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	2	1	0	-----	0	56	0	0
New Hampshire:								
Concord.....	0	0	0	-----	0	1	0	2
Manchester.....	0	0	0	-----	0	0	0	1
Nashua.....	0	0	0	-----	0	0	0	0

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated ex- pec- tancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—CON.								
Vermont:								
Barre .....	0	0	0	-----	0	0	0	1
Burlington .....	1	0	0	-----	0	3	1	0
Massachusetts:								
Boston .....	46	27	19	3	3	27	81	49
Fall River .....	3	3	1	2	2	45	3	5
Springfield .....	20	2	2	-----	0	17	23	2
Worcester .....	5	3	0	2	0	0	27	5
Rhode Island:								
Pawtucket .....	0	1	0	-----	0	0	0	0
Providence .....	2	7	2	-----	1	103	3	9
Connecticut:								
Bridgeport .....	1	5	2	1	1	0	2	6
Hartford .....	8	4	1	-----	0	0	15	11
New Haven .....	8	1	0	-----	0	1	10	4
MIDDLE ATLANTIC								
New York:								
Buffalo .....	29	10	4	-----	3	0	2	35
New York .....	195	206	56	97	46	143	143	347
Rochester .....	8	6	2	-----	0	278	4	7
Syracuse .....	9	3	0	-----	0	594	6	9
New Jersey:								
Camden .....	10	7	4	2	2	1	1	6
Newark .....	44	16	2	24	0	31	89	21
Trenton .....	5	2	0	7	1	1	3	13
Pennsylvania:								
Philadelphia .....	106	60	12	33	19	8	49	84
Pittsburgh .....	39	17	5	6	8	283	28	23
Reading .....	25	2	1	-----	3	3	5	5
Scranton .....	3	-----	2	-----	0	3	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati .....	10	7	4	5	15	2	0	22
Cleveland .....	88	21	7	166	17	809	102	36
Columbus .....	9	2	3	5	3	0	1	5
Toledo .....	15	1	0	5	2	42	0	3
Indiana:								
Fort Wayne .....	0	2	4	-----	0	1	0	7
Indianapolis .....	36	3	0	-----	4	6	135	19
South Bend .....	4	2	0	-----	0	0	0	0
Terre Haute .....	2	0	0	-----	1	3	0	4
Illinois:								
Chicago .....	87	91	18	17	10	305	15	51
Springfield .....	5	1	1	3	0	0	8	6
Michigan:								
Detroit .....	56	42	13	26	12	183	27	30
Flint .....	5	2	0	10	1	120	69	3
Grand Rapids .....	5	1	0	-----	4	95	34	5
Wisconsin:								
Kenosha .....	2	0	0	-----	0	0	1	0
Madison .....	11	1	0	-----	-----	0	0	-----
Milwaukee .....	97	12	2	3	2	598	17	12
Racine .....	24	0	0	-----	0	98	10	1
Superior .....	0	0	0	-----	0	0	30	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth .....	5	0	0	-----	1	1	0	1
Minneapolis .....	7	12	4	-----	1	0	2	8
St. Paul .....	1	5	1	1	1	2	5	8
Iowa:								
Davenport .....	1	0	0	-----	-----	0	1	-----
Des Moines .....	0	1	3	-----	-----	0	0	-----
Sioux City .....	5	0	1	-----	-----	0	5	-----
Waterloo .....	5	0	1	-----	-----	2	0	-----
Missouri:								
Kansas City .....	5	4	3	-----	1	1	1	20
St. Joseph .....	4	0	1	-----	0	0	1	5
St. Louis .....	27	33	15	4	2	4	8	27

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—contd.								
North Dakota:								
Fargo.....	1	0	0	-----	0	9	6	0
South Dakota:								
Aberdeen.....	2	0	0	-----		7	0	-----
Nebraska:								
Omaha.....	5	3	3	-----	0	0	0	8
Kansas:								
Topeka.....	40	1	0	3	2	0	4	4
Wichita.....	5	1	0	-----	0	79	1	1
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	2	5	-----	0	0	0	11
Maryland:								
Baltimore.....	111	18	9	84	7	5	99	46
Cumberland.....	1	0	0	12	1	6	0	4
Frederick.....	0	0	1	1	0	2	0	0
District of Columbia								
Washington.....	0	12	6	11	5	2	0	36
Virginia:								
Lynchburg.....	18	2	0	-----	0	2	1	3
Norfolk.....	22	2	0	-----	0	3	0	3
Richmond.....	0	2	2	-----	1	0	0	4
Roanoke.....	1	1	0	-----	0	0	0	1
West Virginia:								
Charleston.....	3	1	0	4	1	75	0	2
Huntington.....	0	1	1	-----	0	3	0	0
Wheeling.....	0	0	0	-----	0	0	0	5
North Carolina:								
Raleigh.....	0	0	0	-----	0	23	0	0
Wilmington.....	3	0	1	-----	0	0	0	2
Winston-Salem.....	20	1	1	4	2	1	2	3
South Carolina:								
Charleston.....	5	0	0	78	1	0	0	6
Columbia.....	0	0	-----	-----	-----	-----	-----	-----
Greenville.....	0	0	0	-----	0	4	0	0
Georgia:								
Atlanta.....	1	2	4	14	0	0	0	7
Brunswick.....	5	0	0	-----	0	0	0	0
Savannah.....	3	1	0	5	0	0	0	3
Florida:								
Miami.....	1	2	1	-----	0	2	0	1
Tampa.....	3	0	1	-----	0	0	0	3
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	-----	0	0	0	7
Lexington.....	1	-----	1	2	0	5	8	3
Tennessee:								
Memphis.....	4	3	1	-----	1	-----	0	12
Nashville.....	0	0	0	-----	2	0	0	5
Alabama:								
Birmingham.....	1	2	0	17	3	3	7	6
Mobile.....	0	0	0	-----	1	0	1	2
Montgomery.....	-----	0	-----	-----	-----	-----	-----	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	1	-----	-----	0	0	-----
Little Rock.....	3	0	0	1	3	0	4	12
Louisiana:								
New Orleans.....	0	12	14	5	3	0	0	12
Shreveport.....	3	0	0	-----	0	12	5	7
Oklahoma:								
Oklahoma City.....	6	2	3	30	3	0	0	9
Texas:								
Dallas.....	0	5	11	7	7	31	3	4
Fort Worth.....	18	3	3	-----	0	1	1	7
Galveston.....	0	0	1	-----	0	0	0	5
Houston.....	0	5	6	-----	3	5	0	10
San Antonio.....	2	3	1	-----	9	0	0	9

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN								
Montana:								
Billings.....	1	0	0	-----	0	1	0	0
Great Falls.....	2	0	0	-----	2	0	0	0
Helena.....	0	0	0	-----	0	0	0	0
Missoula.....	0	0	0	23	2	0	0	0
Idaho:								
Boise.....	0	0	0	-----	0	0	1	0
Colorado:								
Denver.....	11	7	0	-----	0	69	34	8
Pueblo.....	29	0	1	-----	0	0	1	2
New Mexico:								
Albuquerque.....	2	0	1	-----	0	65	1	2
Arizona:								
Phoenix.....	0	-----	0	-----	0	0	0	1
Utah:								
Salt Lake City.....	25	1	0	-----	1	0	0	6
Nevada:								
Reno.....	0	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	23	2	0	-----	-----	526	4	-----
Spokane.....	9	1	1	-----	-----	0	0	-----
Tacoma.....	0	1	0	-----	0	26	1	4
Oregon:								
Portland.....	25	7	1	-----	0	128	8	5
Salem.....	8	1	0	3	-----	1	5	-----
California:								
Los Angeles.....	132	34	30	46	1	8	23	18
Sacramento.....	26	0	3	1	1	65	0	5
San Francisco.....	47	12	3	3	0	136	2	4

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine.....											
Portland.....	4	4	0	0	0	1	0	0	0	9	24
New Hampshire:											
Concord.....	1	6	0	0	0	0	0	0	0	0	13
Manchester.....	2	0	0	0	0	0	0	0	0	0	13
Nashua.....	0	3	0	0	0	0	0	0	0	0	-----
Vermont.....											
Barre.....	0	0	0	0	0	0	0	0	0	0	2
Burlington.....	0	0	0	0	0	0	0	0	0	0	6
Massachusetts:											
Boston.....	92	174	0	0	0	13	1	0	0	38	269
Fall River.....	5	9	0	0	0	2	0	0	0	7	31
Springfield.....	10	10	0	0	0	2	0	0	0	19	35
Worcester.....	11	57	0	0	0	3	0	0	0	15	66
Rhode Island:											
Pawtucket.....	4	0	0	0	0	0	0	0	0	0	16
Providence.....	15	22	0	0	0	3	0	2	0	3	90
Connecticut:											
Bridgeport.....	13	8	0	0	0	1	0	0	0	8	26
Hartford.....	7	6	0	0	0	1	0	0	0	10	55
New Haven.....	6	9	0	0	0	2	0	0	0	11	55
MIDDLE ATLANTIC											
New York:											
Buffalo.....	28	123	0	0	0	5	1	0	0	24	188
New York.....	347	1,061	0	0	0	111	8	5	1	143	1,911
Rochester.....	12	72	0	0	0	2	0	0	0	8	92
Syracuse.....	13	38	0	0	0	1	0	0	0	43	66

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
MIDDLE ATLANTIC— continued											
New Jersey:											
Camden.....	6	44	0	0	0	0	0	0	0	5	40
Newark.....	40	37	0	0	0	9	0	0	0	25	109
Trenton.....	6	4	0	0	0	4	0	0	0	3	47
Pennsylvania											
Philadelphia..	104	250	0	0	0	24	1	1	0	170	590
Pittsburgh.....	31	51	0	0	0	5	0	1	0	56	176
Reading.....	5	27	0	0	0	0	0	0	0	18	29
Scranton.....		47		0	0	0		0	0	11	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	26	45	1	0	0	13	0	0	0	8	194
Cleveland.....	46	70	0	0	0	20	1	0	0	142	265
Columbus.....	12	13	1	3	0	3	0	0	0	87	73
Toledo.....	15	10	0	0	0	4	0	0	0	97	66
Indiana:											
Fort Wayne.....	5	4	0	0	0	2	0	0	0	8	33
Indianapolis.....	14	7	8	0	0	5	0	0	0	43	
South Bend.....	4	2	0	0	0	0	0	0	0	0	
Terre Haute.....	1	1	1	0	0	0	0	0	0	1	26
Illinois:											
Chicago.....	146	223	1	1	0	51	1	2	0	180	717
Springfield.....	3	3	0	0	0	0	0	1	0	11	27
Michigan:											
Detroit.....	127	246	1	0	0	17	1	1	0	137	274
Flint.....	15	2	2	0	0	2	0	1	0	18	28
Grand Rapids.....	11	9	0	0	0	0	0	0	0	0	41
Wisconsin:											
Kenosha.....	3	2	0	0	0	0	0	0	0	6	9
Madison.....	4	2	0	0	0	0	0	0	0	13	
Milwaukee.....	29	40	0	0	0	2	0	0	0	151	92
Racine.....	5	0	0	0	0	0	0	0	0	2	21
Superior.....	3	0	0	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	8	1	0	0	0	0	0	0	0	1	13
Minneapolis.....	39	35	2	0	0	1	1	0	0	3	99
St. Paul.....	29	16	0	0	0	4	0	0	0	14	65
Iowa:											
Davenport.....	2	8	2	0	0	0	0	0	0	0	
Des Moines.....	10	13	2	0	0	0	0	0	0	0	40
Sioux City.....	3	3	1	1	0	0	0	0	0	2	
Waterloo.....	4	0	0	0	0	0	1	0	0	5	
Missouri:											
Kansas City.....	27	11	3	0	0	6	0	0	0	32	110
St. Joseph.....	4	1	0	0	0	2	0	0	0	2	18
St. Louis.....	43	30	3	0	0	16	2	1	0	57	287
North Dakota:											
Fargo.....	2	0	0	0	0	1	0	0	0	0	4
South Dakota:											
Aberdeen.....	1	0	0	1	0	0	0	0	0	5	
Nebraska:											
Omaha.....	5	5	3	8	0	3	0	0	0	4	65
Kansas:											
Topeka.....	2	1	1	0	0	0	0	0	0	27	19
Wichita.....	6	1	1	0	0	0	0	0	0	2	17
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	17	0	0	0	0	0	0	0	9	38
Maryland:											
Baltimore.....	40	102	0	0	0	11	1	0	0	131	264
Cumberland.....	1	0	0	0	0	1	0	0	0	5	26
Frederick.....	0	0	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington.....	27	20	1	0	0	12	1	0	0	80	200

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
SOUTH ATLANTIC— continued											
Virginia:											
Lynchburg .....	0	2	0	0	0	0	0	0	0	17	12
Norfolk .....	1	3	0	0	0	1	0	1	0	11	32
Richmond .....	4	4	0	0	0	4	0	0	0	3	51
Roanoke .....	1	4	0	0	0	0	0	0	0	0	16
West Virginia:											
Charleston .....	0	2	0	0	0	4	0	0	0	0	15
Huntington .....		2		0	0	0		0	0	0	
Wheeling .....	1	4	0	0	0	0	0	0	0	18	20
North Carolina:											
Raleigh .....	0	0	0	0	0	0	0	0	0	0	11
Wilmington .....	1	0	0	0	0	0	0	0	0	12	6
Winston-Salem .....	0	31	0	0	0	0	0	0	0	30	14
South Carolina:											
Charleston .....	0	0	0	0	0	3	0	0	0	0	24
Columbia .....	0		1				0				
Greenville .....		2	1	0	0	0		0	0	0	
Georgia:											
Atlanta .....	9	3	1	0	0	5	0	1	0	1	73
Brunswick .....	0	0	0	0	0	0	1	0	0	0	2
Savannah .....	0	1	1	0	0	4	0	4	1	1	28
Florida:											
Miami .....	1	0	0	0	0	3	0	1	0	0	30
Tampa .....	1	1	0	0	0	2	0	1	0	0	31
EAST SOUTH CENTRAL											
Kentucky:											
Covington .....	3	0	0	0	0	3	0	0	0	0	33
Lexington .....		0		0	0	1		0	0	7	14
Tennessee:											
Memphis .....	13	10	1	2	0	6	1	0	0	17	93
Nashville .....	3	3	1	0	0	2	0	1	1	5	43
Alabama:											
Birmingham .....	4	2	1	0	0	6	0	2	0	13	61
Mobile .....	1	1	0	4	0	1	0	0	0	0	23
Montgomery .....	1		0				0				
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith .....	0	0	0	0			0	0		1	
Little Rock .....	1	0	0	0	0	4	0	0	0	7	22
Louisiana:											
New Orleans .....	10	3	0	0	0	16	2	4	0	44	166
Shreveport .....	1	1	1	0	0	3	0	0	2	4	48
Oklahoma:											
Oklahoma City .....	3	10	2	1	0	1	0	0	0	3	48
Texas:											
Dallas .....	5	6	1	0	0	6	0	2	1	12	62
Fort Worth .....	2	11	4	5	0	1	0	0	0	0	42
Galveston .....	1	0	0	0	0	1	0	0	0	0	15
Houston .....	2	5	2	0	0	2	0	0	0	0	67
San Antonio .....	0	0	0	0	0	3	0	0	0	1	70
MOUNTAIN											
Montana:											
Billings .....	1	0	0	0	0	0	0	0	0	0	5
Great Falls .....	2	0	0	0	0	0	0	0	0	0	9
Helena .....	0	0	0	0	0	0	0	0	0	0	8
Missoula .....	1	3	0	0	0	0	0	0	0	0	8
Idaho:											
Boise .....	0	0	1	0	0	0	0	0	0	0	6
Colorado:											
Denver .....	14	21	0	0	0	3	0	0	0	20	76
Pueblo .....	0	0	1	0	0	0	0	0	0	0	5
New Mexico:											
Albuquerque .....	1	2	0	0	0	1	0	0	0	0	9
Arizona:											
Phoenix .....	1	0	1	0	0	2	0	0	0	0	



Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
<b>MOUNTAIN - con.</b>											
Utah:											
Salt Lake City.	3	3	0	0	0	0	0	1	0	11	31
Nevada:											
Reno.	0	0	0	0	0	0	0	0	0	0	4
<b>PACIFIC</b>											
Washington:											
Seattle	10	5	3	0			1	0		6	
Spokane	6	1	9	0			0	0		1	
Tacoma	3	1	4	1	0	1	0	0	0	4	31
Oregon											
Portland	5	1	10	8	0	3	0	0	0	8	0
Salem	0	0	0	0	0	0	0	0	0	4	
California											
Los Angeles	40	56	4	0	0	26	2	1	1	34	289
Sacramento	3	2	1	0	0	2	0	1	0	1	35
San Francisco	25	5	1	7	0	11	1	1	0	6	143

	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Polio-myelitis (infan- tile paralysis)	
Division, State, and city	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expect- ancy	Cases Deaths
<b>NEW ENGLAND</b>								
Maine .....								
Portland .....	0	0	1	0	0	0	0	0
Massachusetts .....								
Boston .....	1	0	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>								
New York .....								
New York .....	4	4	3	1	0	0	1	1
New Jersey: .....								
Trenton .....	0	0	0	1	0	0	0	0
Pennsylvania .....								
Philadelphia .....	4	2	0	1	0	0	0	1
Pittsburgh .....	0	2	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>								
Ohio: .....								
Cleveland .....	1	0	1	0	0	0	0	0
Indiana: .....								
Indianapolis .....	7	2	0	0	0	0	0	0
Illinois: .....								
Chicago .....	1	1	1	0	1	0	0	0
Michigan: .....								
Detroit .....	1	1	0	0	0	0	0	0
Wisconsin: .....								
Milwaukee .....	0	0	1	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>								
Minnesota .....								
St. Paul .....	0	0	0	0	0	0	0	1
Iowa .....								
Des Moines .....	2	0	0	0	0	0	0	0
Waterloo .....	1	0	0	0	0	0	0	0
Missouri: .....								
St. Louis .....	1	0	0	0	0	0	0	0
Nebraska: .....								
Omaha .....	1	0	0	0	0	0	0	1

## City reports for week ended March 26, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	1	0	1	0	0	0	0	0
District of Columbia:									
Washington.....	2	1	0	0	0	1	0	0	0
West Virginia:									
Wheeling.....	1	1	0	0	0	0	0	1	0
North Carolina:									
Raleigh.....	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	0	0	1	0
Georgia:									
Brunswick.....	0	0	0	0	1	0	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	0	2	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	1	0	0	0	2	0	0	0
Alabama:									
Mobile.....	0	0	0	0	1	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Little Rock.....	0	1	0	0	0	2	0	0	0
Louisiana:									
New Orleans.....	0	1	0	0	1	1	0	0	0
Oklahoma:									
Oklahoma City.....	1	0	0	0	0	0	0	0	0
Texas:									
Dallas.....	0	0	0	0	2	2	0	0	0
Galveston.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Utah:									
Salt Lake City.....	1	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Tacoma.....	0	0	0	0	0	0	0	1	0
California:									
Los Angeles.....	1	0	0	0	0	0	0	0	0
San Francisco.....	1	0	0	0	0	0	0	0	0

<sup>1</sup> Typhus fever. 2 cases and 1 death at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended March 26, 1932, compared with those for a like period ended March 28, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

Summary of weekly reports from cities, February 21 to March 26, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931
98 cities .....	64	70	62	73	59	65	62	65	52	78
New England.....	65	89	48	106	53	79	65	67	65	70
Middle Atlantic.....	72	56	63	61	56	67	54	64	56	63
East North Central.....	45	78	66	75	54	72	48	72	31	82
West North Central.....	66	55	49	71	74	63	100	73	55	163
South Atlantic.....	69	77	78	93	59	53	49	73	60	61
East South Central.....	46	59	35	29	46	35	12	23	6	76
West South Central.....	119	132	102	118	135	68	162	71	112	64
Mountain.....	9	87	9	61	26	26	43	17	9	87
Pacific.....	67	57	57	63	44	55	89	51	70	69

## MEASLES CASE RATES

	571	703	698	769	171	947	740	1,041	727	1,208
98 cities .....	571	703	698	769	171	947	740	1,041	727	1,208
New England.....	1,510	635	1,740	909	901	1,346	860	1,527	599	1,479
Middle Atlantic.....	466	645	504	874	644	1,026	578	1,158	598	1,321
East North Central.....	590	300	919	369	936	582	1,167	558	1,203	722
West North Central.....	226	874	241	643	165	595	370	492	186	651
South Atlantic.....	282	2,805	424	2,241	286	2,758	302	3,448	232	3,889
East South Central.....	0	1,051	17	1,045	58	1,157	23	1,004	19	1,650
West South Central.....	234	24	257	68	99	37	40	51	158	74
Mountain.....	250	1,210	198	1,331	509	1,462	388	1,288	603	1,140
Pacific.....	1,296	223	1,313	347	1,205	357	1,443	394	1,449	519

## SCARLET FEVER CASE RATES

	441	373	475	345	481	375	493	389	478	403
98 cities .....	441	373	475	345	481	375	493	389	478	403
New England.....	673	606	666	527	769	589	724	676	731	697
Middle Atlantic.....	694	381	777	359	790	389	786	392	755	454
East North Central.....	372	364	382	346	382	399	394	305	397	378
West North Central.....	248	509	231	492	178	518	212	589	197	580
South Atlantic.....	284	361	312	354	327	311	371	342	382	311
East South Central.....	121	558	87	405	81	482	110	487	100	564
West South Central.....	56	125	66	71	79	95	89	102	49	78
Mountain.....	172	305	155	305	172	400	215	305	223	209
Pacific.....	124	145	158	122	135	96	147	110	133	101

## SMALLPOX CASE RATES

	4	20	4	13	5	19	5	22	4	17
98 cities .....	4	20	4	13	5	19	5	22	4	17
New England.....	5	0	10	0	0	0	0	0	0	0
Middle Atlantic.....	1	0	0	0	0	0	0	0	0	0
East North Central.....	1	11	7	15	5	9	4	8	2	7
West North Central.....	19	128	6	57	11	132	20	130	17	99
South Atlantic.....	0	0	6	0	0	0	0	0	0	4
East South Central.....	17	23	17	23	46	0	12	12	38	12
West South Central.....	7	64	7	47	0	61	13	15	0	78
Mountain.....	0	9	0	17	17	17	17	9	0	44
Pacific.....	13	39	4	12	13	41	11	43	15	22

## TYPHOID FEVER CASE RATES

98 cities	5	7	6	4	5	3	2	4	5	4
New England	2	5	5	5	0	0	2	2	5	2
Middle Atlantic	4	6	4	3	3	2	1	2	3	2
East North Central	4	3	6	1	1	2	2	2	3	2
West North Central	2	11	0	11	2	0	2	8	4	2
South Atlantic	16	22	20	12	25	6	2	16	12	12
East South Central	12	6	17	18	6	18	29	0	19	0
West South Central	7	14	16	0	10	14	23	10	20	7
Mountain	0	0	0	0	9	0	17	0	9	0
Pacific	6	4	0	2	8	4	2	8	6	10

See footnote at end of table.

*Summary of weekly reports from cities, February 21 to March 26, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>—Continued

## INFLUENZA DEATH RATES

	Week ended—									
	Feb. 27, 1932	Feb. 28, 1931	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931
91 cities.....	34	50	37	44	37	34	<sup>2</sup> 37	32	<sup>4</sup> 36	29
New England.....	14	24	17	19	19	36	10	19	17	14
Middle Atlantic.....	39	40	42	32	47	23	39	23	36	20
East North Central.....	37	61	41	48	39	28	40	28	41	25
West North Central.....	29	74	32	59	15	50	<sup>3</sup> 34	47	23	35
South Atlantic.....	31	79	33	73	39	57	49	49	<sup>4</sup> 36	32
East South Central.....	44	76	13	140	25	102	50	115	44	127
West South Central.....	24	45	71	52	37	55	61	35	84	55
Mountain.....	69	17	34	44	26	35	43	35	43	61
Pacific.....	14	41	12	34	7	36	12	34	5	41

## PNEUMONIA DEATH RATES

91 cities.....	157	212	180	194	193	191	<sup>2</sup> 187	184	<sup>4</sup> 193	180
New England.....	192	236	192	185	194	147	156	183	225	156
Middle Atlantic.....	184	217	221	229	250	214	238	216	243	220
East North Central.....	110	192	158	154	131	139	133	132	119	125
West North Central.....	244	218	241	218	215	159	<sup>3</sup> 170	215	239	178
South Atlantic.....	173	313	196	265	224	332	233	269	<sup>4</sup> 272	263
East South Central.....	138	274	160	229	182	242	201	210	201	191
West South Central.....	108	221	172	149	148	211	205	180	199	211
Mountain.....	224	191	198	131	207	235	233	122	138	131
Pacific.....	104	91	102	101	118	125	93	101	72	98

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Kansas City, Mo., not included.

<sup>3</sup> Columbia, S. C., and Montgomery, Ala., not included.

<sup>4</sup> Columbia, S. C., not included.

<sup>5</sup> Montgomery, Ala., not included.

# FOREIGN AND INSULAR

## CANADA

*Provinces—Communicable diseases—Week ended March 19, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended March 19, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomy-elitis	Typhoid fever
Prince Edward Island <sup>1</sup> .....				
Nova Scotia.....		22		
New Brunswick.....	1			1
Quebec.....			1	17
Ontario.....	1	607		1
Manitoba.....				2
Saskatchewan <sup>1</sup> .....				
Alberta <sup>1</sup> .....				1
British Columbia.....				
Total .....	2	629	1	22

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Ontario—Communicable diseases—Comparative—Four weeks ended February 27, 1932.*—The Department of Health of the Province of Ontario, Canada, reports certain communicable diseases for the four weeks ended February 27, 1932, and the corresponding period of 1931, as follows:

Disease	Four weeks 1932		Four weeks 1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	3	2	4	1
Chancroid.....	2			
Chicken pox.....	894		1,028	
Conjunctivitis.....	1			
Diphtheria.....	170	9	150	11
Erysipelas.....	12	3	1	
German measles.....	44		34	
Gonorrhea.....	203	1	275	
Influenza.....	187	9	239	35
Jaundice.....	14			
Lethargic encephalitis.....	2		1	1
Malaria.....				1
Measles.....	4,198	12	152	
Mumps.....	890		888	
Paratyphoid fever.....	2		3	
Pneumonia.....		153		204
Poliomyelitis.....	2	1	2	
Puerperal septicemia.....	3	4		
Scarlet fever.....	451	1	747	4
Septic sore throat.....	17		1	1
Smallpox.....	21		25	
Syphilis.....	198	4	260	
Trench mouth.....	3			
Tuberculosis.....	195	45	126	31
Typhoid fever.....	22	4	17	1
Undulant fever.....	6		14	
Whooping cough.....	542	6	331	3

*Quebec Province—Communicable diseases—Week ended March 19, 1929.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended March 19, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	75	Puerperal fever.....	1
Diphtheria.....	21	Scarlet fever.....	92
Erysipelas.....	2	Tuberculosis.....	91
German measles.....	3	Typhoid fever.....	17
Measles.....	434	Whooping cough.....	38
Polioomyelitis.....	1		

*Quebec Province—Vital statistics—January, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports births, marriages, and deaths, with deaths from certain causes, for the month of January, 1932, as follows:

Population.....	2, 925, 000	Deaths from—Continued	
Number of births.....	6, 063	Influenza.....	97
Births per 1,000 population.....	24.2	Measles.....	15
Number of deaths.....	2, 676	Nephritis.....	157
Deaths per 1,000 population.....	10.6	Pneumonia.....	263
Marriages.....	1, 000	Polioomyelitis.....	4
Marriages per 1,000 population.....	4.0	Puerperal fever.....	30
Deaths under 1 year.....	598	Scarlet fever.....	8
Deaths under 1 year per 1,000 live births.....	98.3	Syphilis.....	16
Deaths from—		Tuberculosis, respiratory system.....	183
Cancer.....	118	Tuberculosis, other forms.....	54
Cerebrospinal meningitis.....	2	Trachea.....	30
Diphtheria.....	20	Typhoid fever.....	22
Diabetes.....	31	Violence.....	61
Diarrhea.....	127	Whooping cough.....	25
Heart disease.....	319		

## CUBA

*Habana—Communicable diseases—Four weeks ended March 26, 1932.*—During the four weeks ended March 26, 1932, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	2	-----	Scarlet fever.....	3	-----
Diphtheria.....	10	3	Tuberculosis.....	45	8
Malaria.....	6	-----	Typhoid fever.....	7	1
Measles.....	9	-----			

## PHILIPPINE ISLANDS

*Anthrax.*—According to a recent report, there was a sharp increase in the prevalence of anthrax in several provinces of the island of Luzon, P. I. From March 19 to April 6, 1932, 53 cases of anthrax, with 50 deaths, occurred among water buffalo in the Provinces of Pampanga, Tarlac, Laguna, Rizal, and Pangasinan. Thirty-seven human cases,

with 19 deaths, caused by the ingestion of flesh of diseased water buffalo, were reported in the Provinces of La Union and Pangasinan during the same period.

#### PORTO RICO

*San Juan—Communicable diseases—Four weeks ended February 27, 1932.*—During the four weeks ended February 27, 1932, cases of certain communicable diseases were reported in San Juan, Porto Rico, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	1	Measles.....	46
Diphtheria.....	6	Pellagra.....	2
Filariasis.....	1	Typhoid fever.....	3
Influenza.....	3	Whooping cough.....	5
Malaria.....	33		

#### TRINIDAD

*Port of Spain—Vital statistics—February, 1931, 1932.*—The following statistics for the month of February, 1931 and 1932, are taken from a report issued by the public health department of Port of Spain, Trinidad.

	1931	1932		1931	1932
Number of births.....	140	139	Death rate per 1,000 population ...	19.7	15.5
Birth rate per 1,000 population.....	27.1	25.0	Deaths under 1 year.....	23	10
Number of deaths.....	102	86	Deaths under 1 year per 1,000 births	164.3	115.1

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given

## CHOLERA

[C indicates cases, D, deaths, P, present]

Place	Week ended—																							
	Sept. 26- Oct. 17, 1931		Oct. 18- Nov. 14, 1931		Nov. 15- Dec. 12, 1931		December, 1931			January, 1932						February, 1932						March, 1932		
	19	26	2	9	16	23	30	6	13	20	27	5	12	19										
Ceylon: Colombo.....																								
D																								
China:																								
Canton.....																								
D																								
Hankow.....																								
D																								
Shanghai.....																								
D																								
Swatow.....																								
D																								
India.....																								
D																								
Bombay.....																								
D																								
Calcutta.....																								
D																								
Chittagong.....																								
D																								
Madras.....																								
D																								
Rangoon.....																								
D																								
India (French):																								
Chandernagor.....																								
D																								
Karikal.....																								
D																								
Pondicherry.....																								
D																								
India (Portuguese).....																								
D																								











## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	Nov- em- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Feb- ru- ary, 1932	Place	Aug- ust, 1931	Sep- tem- ber, 1931	Octo- ber, 1931	Nov- em- ber, 1931	De- cem- ber, 1931	Jan- uary, 1932	Feb- ru- ary, 1932
British East Africa (see also table above): Kenya.....	C							Peru—Continued.							
Ecuador:	235	14	64	44	41	17	29	Departments—Continued.							
Province—								Lambayeque.....	C	1	1				
Chimborazo.....		13		8		8	13	Libertad.....	D	1		2		1	
Loja.....		4	11	2		11		Lima.....	C	1		9		6	
Indo-China.....		4	3		9	16	1		D	1		4			
Madagascar (see also table above):					5	9	1	Plague-infected rats			1				
Ambesitra Province.....	C							Lima.....	C						
Antistrabe Province.....	D	2	1	8	142			Piura.....	D			1			
Maevatanana Province.....	D	1	1	5	37	121			D			1		1	
Miarinarivo Province.....	D	23	19	17	27	46		Senegal			8				
Moramanga Province.....	D	22	19	17	31			Raol.....	D						
Tananarive Province.....	D			4					C	101	13	6	2		
Peru.....		20	14	18	10	4		Dakar.....	D	58	8	2			
Departments—		19	12	16	9	14		Diourbel.....	D	104	45	4			
Caneta.....	C	3	12	13	25	30		Louga.....	C	106	31	4			
Cajamarca.....	D	3	11	11	25	28		Rufisque.....	D		13	10			
	D	45	65	120	186	248		Thies.....	D	2	5	5			
	D	44	63	117	178	241		Yombel.....	D	2	10	19			
	D	19	2	8	27	21	11			2	1	2	10		
	D	14	2	7	11	9				2	7	1	2		
										26	12	7	16		
										16	8	5	7		
															1

1 Reports incomplete.

## SMALLPOX

[C indicates cases; D, deaths, P, present]

Place	Week ended—																
	Sept. 20- Oct. 17, 1931			Oct. 18- Nov. 14, 1931			Nov. 15- Dec. 12, 1931			December, 1931			January, 1932				
	20- Oct. 17, 1931	18- Nov. 14, 1931	15- Dec. 12, 1931	18- Nov. 14, 1931	19- Dec. 15, 1931	20- Nov. 17, 1931	21- Dec. 18, 1931	22- Nov. 19, 1931	23- Dec. 20, 1931	24- Nov. 21, 1931	25- Dec. 22, 1931	26- Nov. 23, 1931	27- Dec. 24, 1931	28- Nov. 25, 1931	29- Dec. 26, 1931	30- Nov. 27, 1931	31- Dec. 28, 1931
Aden.....																	
Algeria.....																	
Algiers.....																	
Southern Territories.....																	
Brazil.....																	
Porto Alegre (alastrim).....																	
Rio de Janeiro.....																	
Santos.....																	
British East Africa: Tanganyika.....																	
British South Africa: Northern Rhodesia.....																	
Southern Rhodesia.....																	
Canada.....																	
Alberta.....																	
British Columbia.....																	
Manitoba.....																	
Nova Scotia.....																	
Ontario.....																	
North Bay.....																	
Ottawa.....																	
Toronto.....																	
Quebec.....																	
Saskatchewan.....																	
Regina.....																	
Chile: Santiago.....																	
Tocopilla.....																	

: 23 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 18, 1932.







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Week ended—													
				December, 1931			January, 1932					February, 1932				March, 1932	
				19	26	2	9	16	23	30	6	13	20	27	5	12	19
Mexico (see also table below):																	
Chihuahua.....																	
Jalisco (State)—Guadalupe.....	4	2	1														
Mexico City and surrounding territory.....	7	5	10	6		2	3	6	5	7	9	11		1		1	
Monterrey.....	4	1															
San Luis Potosi.....		2															
Torreón.....	1		7		1	1	2	1	2	1	1	2	5	1	2	1	
					2	2	2	3	1	1			2	2	1	1	
Morocco (see table below).																	
Netherlands: Friesland—Opsterland.....																	
Nigeria.....	454	69	15														
Panama: Chiriqui.....	141	15	1				181	36									
Poland.....			3				107	13									
Portugal.....		2	1	1													
Lisbon.....	48	78	91	35	14	26	33	22	31	7	21	5	17	7	10	14	
Oporto.....			2	1			1	2	1	1	4	1	1	8	4	4	
Siam.....			8				5		1								
Straits Settlements.....				2						4		1		2	2	1	
Sudan (Anglo-Egyptian).....										1							
			2				2		3		1		3	5	1	3	
Sweden: Malmö.....									9								
Syria (see table below).....																	
Tunisia: Tunis.....																	
Turkey: (see also table below) Istanbul.....																	
Union of South Africa:																	
Cape Province.....		P	P	P	P	P	P										
Orange Free State.....																	
Transvaal.....																	
On vessels:																	
Brazilian ship Jabotao at New Orleans from Brazil.....						1											













UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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APRIL 22 - - - - - 1932

## SPECIAL ARTICLES

Endemic Typhus Experimentally Transmitted by the Rat  
Flea *C. fasciatus*

Arsenoxide Formation from Arsphenamines in Vitro and in  
the Living Animal



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1932



## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

ASST SURG GEN. R. C. WILLIAMS, *Chief of Division*

THE PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

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# PUBLIC HEALTH REPORTS

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## TYPHUS FEVER

### THE EXPERIMENTAL TRANSMISSION OF ENDEMIC TYPHUS FEVER OF THE UNITED STATES BY THE RAT FLEA *Ceratophyllus fasciatus*

By R. E. DYER, *Surgeon*, W. G. WORKMAN, *Assistant Surgeon*, and L. F. BADGER  
and A. RUMREICH, *Passed Assistant Surgeons, United States Public Health  
Service*

In our first studies on the part played by rat fleas in the transmission of endemic typhus from rat to rat or from rat to man, two species of rat fleas were incriminated—*Xenopsylla cheopis* and *Ceratophyllus fasciatus*. The infectibility of *X. cheopis* with endemic typhus has been shown and the probable mechanism by which the infection is transmitted to man has been elucidated in a large measure in our more recent studies. That *C. fasciatus* is infectible with Mexican typhus virus was shown by Mooser and Castaneda.

To determine the ability of *C. fasciatus* to transmit endemic typhus the following experiment was performed:

A few fleas (*C. fasciatus*) were procured from rats trapped in Savannah, Ga. These fleas were placed in glass box C 10, furnished with a fresh white rat as a source of food supply and allowed to breed until many fleas were present in the box. Twelve fleas were then removed from this colony, emulsified in salt solution, and injected into two guinea pigs intraperitoneally. Neither of these animals developed any signs of typhus fever, nor were they found immune upon subsequent inoculation with typhus virus.

Being assured that our colony of this species of flea was noninfected, we then placed in box C 10 three white rats that had been freshly inoculated with endemic typhus virus. Fourteen days after the first, and six days after the last infected rat had been placed in the box, five fleas were removed from these rats, emulsified in salt solution, and injected intraperitoneally into two guinea pigs. One of these guinea pigs developed clinical endemic typhus after an incubation period of 10 days.

From this guinea pig a virus was recovered and studied in other animals. The identification of this strain of virus as endemic typhus virus was established by the six criteria on which we have come to rely for the identification of our experimental strains. These criteria are as follows:

1. Typical febrile reactions and typical scrotal involvement in guinea pigs.

2. Negative blood cultures from guinea pigs at the height of their reaction.

3. Intracellular rickettsia in smears made from the tunica vaginalis of guinea pigs reacting typically.

4. The development in rabbits of agglutinins for *B. proteus* X<sub>19</sub>, type O.

5. Typical histologic lesions in the brains of guinea pigs.

6. Clear-cut cross-immunity between the unknown strain and known strains of typhus.

The recovery of typhus virus from fleas taken from box C 10 was twice repeated. In the first repetition, eight fleas were inoculated into guinea pigs, and in the second repetition, 10 fleas were used. In both instances a virus was recovered which produced the typical clinical picture in guinea pigs. One of these strains was not studied further, while the second was carried only until rickettsia had been found in smears of the tunica of reacting guinea pigs and a positive Weil-Felix had developed in one of the two rabbits inoculated.

A number of fleas were then removed from the typhus-infected colony in box C 10 and placed in box C 11. Three fresh white rats were then placed in box C 11 and allowed to remain 12, 13, and 14 days, respectively. On the days indicated, the rats were killed and their spleens were emulsified in salt solution and injected intraperitoneally into guinea pigs. From the white rat killed on the thirteenth day after his first exposure to infected fleas, a strain of virus was recovered and studied in other animals. This strain of virus was identified as the virus of endemic typhus by the criteria noted above.

(We are indebted to Passed Assistant Surgeon R. D. Lillie for histologic examination of brain specimens.)

#### CONCLUSION

Experimental transmission of the virus of endemic typhus from rat to rat by means of the rat flea *Ceratophyllus fasciatus* has been carried out in the laboratory.

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## THE FORMATION OF ARSENOXIDE FROM THE ARSPHENAMINES IN THE LIVING ANIMAL AND IN TEST-TUBE OXIDATIONS

By SANFORD M. ROSENTHAL, *Senior Pharmacologist, National Institute of Health, United States Public Health Service*

Since the demonstration by Hata (1) and by numerous later investigators (2, 3) that arsphenamine and neoarsphenamine are, in the test tube, relatively nontoxic toward spirochetes and trypanosomes, it has been necessary to modify Ehrlich's view of a direct action of these drugs on the parasite. Several explanations of their action have been advanced, either postulating an action through stimulation of antibody formation or through a change of the drug within the host or the parasite to a compound of greater parasitocidal action.

Ehrlich and Bertheim (4) prepared arsphenamine by reduction of 3-amino-4-hydroxyphenyl arsenious oxide and obtained evidence that this "arsenoxide" is formed when arsphenamine is allowed to undergo oxidation in the air.

Arsenoxide was later found to be several hundred times as trypanocidal *in vitro* as the arsphenamines, and in 1920 Voegtlin and Smith (5) advanced the theory that the parasitocidal action of the arsphenamines is due to their conversion in the body of the host into a compound of the arsenoxide type.

In support of this theory, Voegtlin and Smith showed that in rats infected with *Tr. equiperdum* the trypanocidal action of intravenously injected arsphenamine and related arsenobenzene compounds is always preceded by a latent period of two to three hours, while with compounds of the arsenoxide type the trypanosomes begin to disappear from the blood immediately. It was further found that solutions of arsphenamine and neoarsphenamine that had undergone partial oxidation in air manifested a corresponding reduction of their latent period.

Since arsenoxide is also approximately ten times more toxic to the host than arsphenamine, and approximately twenty times more toxic than neoarsphenamine, the conversion of the arsphenamines in the body into arsenoxide would be of importance in the toxic effects produced by them upon higher animals. The evidence in favor of such a view has been summarized by Voegtlin (6).

Final proof of the arsenoxide theory has awaited more complete information concerning the formation of arsenoxide from arsphenamine *in vitro*, and the demonstration of arsenoxide in the tissues of animals following the injection of the arsphenamines.

We have developed a color test which will differentiate between the arsphenamines and arsenoxide. With this procedure, confirmatory evidence has been obtained that arsenoxide is formed from the arsphenamines, both in the living animal and also in test-tube oxidations.

## THE TEST

It was observed that under certain conditions  $\beta$ -naphthoquinone sodium sulphonate would give a strong color reaction with arsenoxide and very little color with the arsphenamines. After a large number of experiments it was possible to develop these conditions so that a fair degree of specificity of the reaction for arsenoxide was obtained.

$\beta$ -naphthoquinone has been employed by several investigators because of its ability to react with other compounds to form highly colored complexes. Ehrlich and Herter (7) and Herter (8) studied the color reactions between this dye and a large number of substances. Ehrlich and Berthelm (4) state that this dye reacts with arsenoxide, forming a dark red condensation product, soluble in alkali.

Folin (9) employed this naphthoquinone for the estimation of amino nitrogen in the blood, and Sullivan (10) has developed a highly specific color test for cysteine. It was while we were studying the reaction between cysteine and arsenoxide that the capacity of the latter substance for giving a color reaction with naphthoquinone was observed.

The procedure which we have finally employed is as follows:

Five c. c. of the aqueous solution containing arsenoxide is made neutral to litmus. Two c. c. of a 10 per cent aqueous solution of sodium cyanide is then added and the solution is mixed. There are then added 2 c. c. of a 0.25 per cent solution of  $\beta$ -naphthoquinone sodium sulphonate made up in a 10 per cent aqueous solution of sodium thiosulphate ( $\text{Na}_2\text{S}_2\text{O}_3$ ). The addition of 0.2 c. c. of 50 per cent cadmium sulphate will approximately double the intensity of the color obtained, and we have usually added it at this point when testing for the low concentrations of arsenoxide found in tissues. It is best to make up the solution of naphthoquinone in thiosulphate 10 minutes before using and to employ especially clean glassware. If naphthoquinone thiosulphate, water, and glassware are satisfactory, the yellow color of the quinone will have almost completely disappeared after standing 10 minutes in thiosulphate solution. A thin layer of mineral oil is now run over the top of the solution being tested, and the test tubes are set aside at room temperature for 30 minutes, after which time 1 c. c. of a 20 per cent aqueous solution of sodium sulphite ( $\text{Na}_2\text{SO}_3$ ) is added. The tube is gently shaken and the color is compared with a series of tubes containing known amounts of arsenoxide, upon which simultaneous tests have been run. From 0.15 mg. to 3 mg. of arsenoxide in 5 c. c. of solution can be estimated by this method. Direct comparison in a comparator block has been found more satisfactory than the use of the colorimeter where slight differences in shade of color were present. Accuracy to within 5 per cent can usually be obtained in this way.

## THE SPECIFICITY OF THE TEST

While a complete specificity for arsenoxide is not claimed for this procedure, we have tested out a large number of arsenicals in dilute solution, and numerous protein-free extracts of various tissues, with negative results. The only compound which we know that gives a comparable color, and which might be present in the solutions or extracts tested, is ortho-aminophenol. By a modification of the test to be described in the following paragraphs, we have been able to distinguish between these two substances.

In Table 1 is listed the arsenic compounds which we have tested. Inorganic tri- or pentavalent arsenic gives no color, nor does it interfere with the color given by arsenoxide. The pentavalent compound corresponding to arsenoxide, 3-amino-4-hydroxyphenyl arsonic acid, gives no reddish color unless present in relatively high concentrations (0.1 per cent), considerably above any that we have dealt with, either in the tissue extracts or in the test-tube experiments. When either the amino or the hydroxy group is absent from arsenoxide, the reaction is negative. Freshly prepared solutions of arsphenamine, neoarsphenamine, and sulpharsphenamine are negative with this reaction. Doctor Shonle, of Eli Lilly Laboratories, has kindly furnished us with several trivalent arsenicals of the arsenoxide type, as well as pentavalent aromatic arsenicals, containing either amino or hydroxy groups in the benzene ring. All of these compounds were negative.

TABLE 1.—*Arsenical compounds tested with the naphthoquinone reaction*

Compound	Parts per million	Color produced
3-amino-4-hydroxyphenyl arsenious oxide (arsenoxide) <sup>1</sup> .....	400	Red-brown.
Arsphenamine.....	400	Yellow.
Neoarsphenamine.....	400	Do.
Sulpharsphenamine.....	400	Do.
4-dimethyl aminophenyl arsenious oxide <sup>1</sup> .....	400	Do.
4-hydroxyphenyl arsenious oxide <sup>1</sup> .....	400	Do.
p-aminophenyl arsenious oxide <sup>1</sup> .....	300	Do.
p-acetylaminophenyl arsenious oxide <sup>1</sup> .....	300	Do.
p-carbamino phenyl arsenious oxide <sup>2</sup> .....	300	Do.
Arsenious oxide, As <sub>2</sub> O <sub>3</sub> .....	1,000	Do.
Tryparsamide.....	400	Do.
Atorol.....	400	Do.
3-amino-4-hydroxyphenyl arsonic acid <sup>1</sup> .....	400	Do.
Phenylglycine arsonic acid <sup>1</sup> .....	400	Do.
2-nitro-4-hydroxyphenyl arsonic acid.....	400	Do.
Sodium p-acetyl aminophenyl arsinato.....	400	Do.
p-propanol aminophenyl arsonic acid <sup>2</sup> .....	400	Do.

<sup>1</sup> These compounds were prepared by Dr. J. M. Johnson of the National Institute of Health.

<sup>2</sup> Received from Dr. H. A. Shonle of Eli Lilly & Co. Laboratories.

Of the compounds of biological interest which we have studied, glutathione gives a negative reaction with the test, while cysteine in dilute solution gives a faint violet color which is practically eliminated when cadmium sulphate is employed in the test. All of the amino acids which we studied were negative, as well as other substances



which would normally be present in protein-free blood and tissue extracts. Tissue extracts, as well as protein-free urine, were uniformly negative (Table 2).

Of the aromatic compounds which do not contain arsenic, phenol does not give the color reaction; pyridine, aniline, and meta-aminophenol give a yellow color; while para-aminophenol gives a deep violet color quite distinct from that of arsenoxide.

TABLE 2.—*Miscellaneous substances tested with the naphthoquinone reaction. (Commercial samples of high purity)*

Substance	Parts per million	Color produced	Substance	Parts per million	Color produced
Cysteine.....	400	Violet. <sup>1</sup>	Urea.....	2,000	Yellow.
Glutathione.....	400	Yellow.	Creatinine.....	800	Do.
Phenyl alanine.....	800	Do.	Aniline.....	(?)	Do.
Glutamic acid.....	1,000	Do.	Pyridine.....	(?)	Do.
Glyocol.....	400	Do.	Acetanilid.....	400	Do.
Histidine.....	500	Do.	o-aminophenol.....	400	Red-brown.
Tyrosine.....	1,000	Do.	p-aminophenol.....	400	Violet.
Tryptophane.....	400	Do.	m-aminophenol.....	400	Yellow.
Uric acid.....	800	Do.	Urine.....	Undiluted.	Do.

<sup>1</sup> Very faint if cadmium sulphate is employed in the test.

<sup>2</sup> 1 drop in 5 c. c.

<sup>3</sup> 2 drops in 5 c. c.

Ortho-aminophenol gives a color similar to that of arsenoxide and of approximately the same intensity. Since this compound can be formed from arsenoxide by boiling with strong acids (11), it is necessary for the purpose of our experiments to distinguish between them. We have not been able to get rid of the color of the o-aminophenol and retain that of arsenoxide in the test but we have succeeded, by the use of stannous chloride, in modifying the procedure so that practically no red color is given by arsenoxide in dilute solution, while a strong red color is given by o-aminophenol. The procedure is as follows:

To 2 c. c. of 10 per cent sodium thiosulphate is added 10 drops of a 1 per cent stannous chloride solution in 1 per cent hydrochloric acid. Allow this mixture to stand ten minutes, when it becomes of a milky opacity. Then add this mixture to 5 c. c. of the neutral solution to be tested, mix, and add 2 c. c. of 10 per cent sodium cyanide and 4 drops of 10 per cent sodium hydroxide; mix, and allow to stand 10 minutes. Then add 1 c. c. of a freshly prepared 1 per cent aqueous solution of the naphthoquinone; mix, and in exactly 15 seconds add approximately 0.2 gm. of sodium sulphite as the powder, or in 20 per cent solution. Let the solution stand for 30 to 45 minutes, when it will have sufficiently cleared for color comparison. With this method 2 mg. of arsenoxide, or of the arspenamines, give only a yellowish color, while similar amounts of o-aminophenol give a good red color. Amounts as small as 0.1 mg. of o-aminophenol in 5 c. c. can be detected. In the experiments described below we have applied this test for amino-

phenol to oxidized solutions of the arspenamines which we have studied and to tissue extracts giving a positive reaction with the original test as described above. It has been possible to demonstrate that none of the color obtained in our experiments is due to o-aminophenol, but is due to arsenoxide.

THE FORMATION OF ARSENOXIDE FROM THE OXIDATION OF THE ARSPHENAMINES IN VITRO

It was shown by Ehrlich and Bertheim (4) that arspenamine was readily oxidized in the air, and by oxidizing arspenamine with hydrogen peroxide they obtained crystalline 3-amino-4-hydroxyphenyl arsonic acid, so that arsenoxide must have been an intermediate stage. They gave further evidence of the presence of arsenoxide in arspenamine samples by precipitation of arspenamine in methyl alcohol with calcium carbonate, and by determination of the iodine titer of the filtrate; this method would not be specific for arsenoxide, and arsenoxide has not been actually isolated from arspenamine by Ehrlich or by subsequent workers who have studied this problem. Ehrlich, with the above method (4,12), showed that the amount of arsenoxide increased in samples of arspenamine exposed to air, and he attributed much of the toxicity of arspenamine to this substance. The work of Voegtlin and Smith (5) demonstrated that solutions of the arspenamines which were permitted to undergo oxidation *in vitro* manifested a much shorter latent period of action upon trypanosomes in infected rats. This gave biological evidence that arsenoxide was formed. They later studied the oxidation of arspenamine and arsenoxide *in vitro* in the presence of varying amounts of alkali and by a modification of Ehrlich's iodine titration method showed that more arsenoxide was formed from arspenamine when the oxidation proceeded slowly (in the presence of smaller amounts of alkali). The rate of oxidation of neoarsphenamine in water was also shown by them to be much more rapid than that of arspenamine.

Since the work of Ehrlich (4) several investigators have studied the increase of toxicity of the arspenamines when the solutions are exposed to air or aerated, especially Roth (13), Hunt (14), and Schamberg, Kolmer, and Raiziss (15). Smith (16) has shown that arsenoxide is many times more active than arspenamine in its circulatory effects.

Fresh solutions of arspenamine of good quality react negatively with the naphthoquinone test which we have described. The presence of considerable amounts of arspenamine also inhibits the color reaction obtained with arsenoxide. It was therefore necessary to prove that the negative reaction obtained with arspenamine is not due to the interfering action of sodium hydrosulphite ( $\text{Na}_2\text{S}_2\text{O}_4$ ) or related

reducing substances used in the manufacture of arsphenamine. This can be simply shown by precipitation of arsphenamine from a solution, by a procedure which will not remove hydrosulphite; in this way it can be demonstrated that no substances interfering with the color reaction are present in the filtrate. Cadmium sulphate was found to be an effective precipitating agent for arsphenamine, while at the same time it will not precipitate hydrosulphite or related sulphites. By this procedure it was shown that a small amount of arsenoxide added to arsphenamine can be quantitatively recovered in filtrates. The following experiment will illustrate these findings:

Fifty mg. of arsphenamine hydrochloride are dissolved in 9 c. c. of water, 0.5 c. c. of 50 per cent cadmium sulphate is added, the solution is mixed, and 0.45 c. c. of normal sodium hydroxide is added drop by drop with shaking. The filtrate of this solution is negative with the naphthoquinone test. When 2 mg. of arsenoxide are added to arsphenamine it can be quantitatively recovered in the filtrate, revealing that no interfering substances are present. When a small amount of sodium hydrosulphite is put through this procedure the filtrate will actively inhibit the color reaction obtained with arsenoxide.

In the estimation of arsenoxide in the presence of arsphenamine, it is necessary to precipitate and remove the arsphenamine from the solution prior to applying the test, or else values too low will be obtained. We have employed cadmium precipitation in studying the presence of arsenoxide in arsphenamine solutions that are undergoing oxidation.

The formation of arsenoxide from the arsphenamines takes place with great ease in alkaline solution. With arsphenamine itself, experiments done at hydrogen ion concentrations near neutrality are complicated by its almost complete insolubility. However, if care is taken to employ a finely divided suspension, arsenoxide can be formed at pH 7.3 when a fine stream of oxygen is bubbled through a solution of arsphenamine at 38° C.

Experiments with arsphenamine were carried out as follows: Forty-eight mg. are dissolved in 2 c.c. of water, alkali added to make the disodium salt, and then phosphate buffer (Clark and Lubs) is slowly added with shaking to make a volume of 20 c.c. (m/100). Determinations of pH were now made with the glass electrode and alkali or acid added to bring the solution to the desired hydrogen ion concentration.

In Chart 1 is shown the formation of arsenoxide from the arsphenamines, as well as the oxidation of arsenoxide at pH 7.3. With arsphenamine and neoarsphenamine, cadmium precipitation (no alkali employed) was carried out and determinations were done upon the filtrates. The standards consisted of five tubes containing 0.1 to 0.5 c.c. of m/100 arsenoxide plus 0.25 c.c. of cadmium sulphate in

5 c.c. of aqueous solution. The final dilution of the solution was 1 to 10. Each sample was tested for o-aminophenol, and in no instance was a positive test obtained.

The concentration of arsenoxide reached is dependent upon its rate of formation and also upon its rate of oxidation. With arspenamine at pH 7.3 the rate of formation is very slow, owing to solubility factors. This is evident from the curve obtained at pH 9.5, where high concentrations are rapidly reached (Chart 1).

The instability of neoarsphenamine is shown in that the rate of oxidation proceeds more rapidly than with the other compounds. Thirty-five per cent of arsenoxide is present after one-half hour of oxygenation, and 40 per cent after one hour. The high concentrations of arsenoxide reached are of considerable interest. Since a free

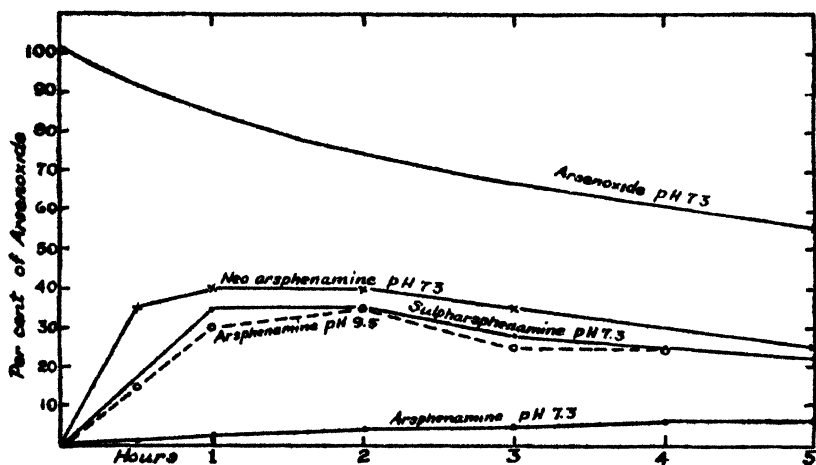


CHART 1.—The formation of arsenoxide from the arspenamines, and the rate of oxidation of arsenoxide, when oxygen is bubbled through 0.01 molar solutions in phosphate buffer at 38° C.

amino group is essential for the color reaction with naphthoquinone, these findings suggest that the methylene sulphinate radical is split off from its amino linkage during the oxidation of neoarsphenamine. This evidence is borne out by the behavior of sulpharsphenamine. We have dealt with three products of this drug which were analyzed by Elvove's procedure (17) and were shown to be 53 per cent, 85 per cent, and 97 per cent disubstitution products. The rate of formation of arsenoxide was similar in all three products. With the 97 per cent disubstitution product the splitting off of the methylene sulphonate radical is essential to the formation of more than 3 per cent of free arsenoxide.<sup>1</sup> The oxidation experiments show that while the initial

<sup>1</sup> For absolute proof that the sulphonate radical is split off it must be shown that sulphonated arsenoxide reacts negatively with the color test. So far we have been unable to obtain such a compound.

rate is slower with sulpharsphenamine than with neoarsphenamine, the concentrations of arsenoxide reached within one to two hours are almost as high (Chart 1). In carrying out the tests upon sulpharsphenamine it was found that, with the product employed, concentrations of 2.0 mg. in 5 c.c. did not require cadmium precipitation for recovery of arsenoxide and in some of the experiments tests were carried out directly upon 0.5 c.c. of the 0.01 molar solution diluted to 5 c.c. with water. Unless the product has been shown not to inhibit the color reaction under these conditions, precipitation should be carried out.

#### COMPARISON OF THE COLOR TEST WITH TOXICITY TESTS UPON RATS

Since the toxicity of arsenoxide to rats is approximately ten times greater than that of arsphenamine, and approximately twenty times that of neoarsphenamine and sulpharsphenamine, a series of experiments was carried out to determine whether the quantity of arsenoxide, as shown by the naphthoquinone test, in oxidized solutions of the arsphenamines could be confirmed by demonstrating a corresponding increase in toxicity to rats. The minimum lethal dose of arsenoxide for rats under standard conditions is very sharply defined and has been previously established (18) by numerous experiments to be 26 mg. per kilo body weight.

With oxidized arsphenamine solutions there was very satisfactory correlation between the arsenoxide content and the toxic effects upon rats. A 0.5 per cent solution was made up in phosphate buffer as described above so that the final pH was approximately 10.5. After oxygen had been bubbled through this solution for 1 hour at 38° C., the arsenoxide content was estimated to be 40 per cent of the molar concentration of arsphenamine, or 2.16 mg. per c.c. With approximately half of the arsphenamine remaining in the solution, the minimum lethal dose should therefore be 54 mg. per kilo. Actually, at 45 mg. per kilo there was 25 per cent mortality, and at 60 mg. per kilo 100 per cent mortality (Table 3). The arsphenamine was brought completely into solution by adding a few drops of alkali immediately prior to the injections. The acute reactions, such as convulsions, lashing of the tail, etc., typical of arsenoxide, were present, and the average time of death with the 60 mg. dose was 92 minutes. With the smaller doses those that survived the first few hours recovered completely; none of the "late deaths" typical of some of the other arsenic compounds were observed.

**TABLE 3.**—*The toxicity to rats of a 0.5 per cent solution of arsphenamine in phosphate buffer (pH approximately 10.5) through which oxygen was bubbled for one hour at 38° C. The arsenoxide content by the color test was 2.16 mg. per c. c. (40 per cent of the arsphenamine), and the calculated M. L. D. was 54 mg. per kilo*

Rat weight	Dosage (mg. per kilo)	Time of death
110 grams.....	30	Survived.
82 grams.....	30	Do.
84 grams.....	30	Do.
100 grams.....	30	Do.
118 grams.....	45	155 minutes.
94 grams.....	45	Survived.
84 grams.....	45	Do.
96 grams.....	45	Do.
100 grams.....	60	120 minutes.
100 grams.....	60	100 minutes.
108 grams.....	60	120 minutes.
108 grams.....	60	30 minutes.

With neoarsphenamine in two series of experiments the acute toxicity was slightly in excess of that indicated by the amount of arsenoxide present, although the picture was complicated by the presence of late symptoms and late deaths. In one experiment at the end of an hour of oxidation in phosphate buffer of pH 7.3 at 38° C. the solution (0.5 per cent neoarsphenamine) contained 38 per cent of the neoarsphenamine as arsenoxide; and on this basis the theoretical minimum lethal dose for rats should have been 85 mg. per kilo. The acute toxicity (death within 24 hours) was found to be 65 mg. per kilo (Table 4). The majority of the rats injected with 37.5 to 50 mg. per kilo died three days later. Some of them had marked nervous symptoms, such as tremor and ataxia. In the other toxicity experiment a portion of the neoarsphenamine precipitated out during the course of the oxidation. At the end of an hour the solution was centrifuged and the tests were done upon the supernatant fluid. The arsenoxide content was estimated to be 1.4 mg. per c. c. and the theoretical M. L. D. should have been 18.5 c. c. per kilo. The M. L. D. as actually determined was found to be from 15 to 18.5 c. c. per kilo. With smaller doses the same late symptoms and frequent late deaths occurred. In all of the neoarsphenamine experiments acute reactions were produced, although they were not as marked as with arsphenamine. The toxicity experiments with oxidized solutions of neoarsphenamine lead us to conclude that besides the indicated amount of arsenoxide there is present some other compound of enhanced toxicity which produces symptoms different from those of arsenoxide. In this connection it is of interest that the production of delayed deaths in rats from fresh solutions of neoarsphenamine is well recognized and is taken into account in the biological standardization of this product.

TABLE 4.—*The toxicity to rats of a 0.5 per cent neoarsphenamine solution in phosphate buffer pH 7.3, through which oxygen was bubbled for one hour at 38° C. Arsenoxide content by color test=1.37 mg. per c. c. (38 per cent). Theoretical M. L. D.=85 mg. per kilo*

Rat weight	Dosage (mg. per kilo)	Time of death
100 grams.....	93	5 minutes.
102 grams.....	93	15 minutes.
104 grams.....	93	2 minutes.
110 grams.....	93	5 minutes.
104 grams.....	75	17 minutes.
104 grams.....	75	18 minutes.
108 grams.....	75	12 hours.
110 grams.....	75	22 minutes.
125 grams.....	75	16 hours.
100 grams.....	65	10 minutes.
112 grams.....	65	15 minutes.
112 grams.....	65	16 hours.
116 grams.....	65	5 minutes.
102 grams.....	50	16 hours.
104 grams.....	50	3 days.
106 grams.....	50	3½ days.
108 grams.....	50	3 days.
90 grams.....	37.5	Survived.
92 grams.....	37.5	3 days
110 grams.....	37.5	20 hours.

With oxidized solutions of sulpharsphenamine the enhanced toxicity to rats was entirely sufficient to account for the estimated amount of arsenoxide present; as with neoarsphenamine the toxicity was slightly in excess of that anticipated. In one experiment after an hour of bubbling oxygen through the 0.5 per cent solution in phosphate buffer of pH 7.3 at 38° C., the arsenoxide content was 1.216 mg. per c. c., or 32 per cent of the molar concentration of the sulpharsphenamine. The theoretical minimum lethal dose was 90 mg. per kilo and the actual M. L. D. was 70 mg. per kilo (Table 5).

In another similar experiment the theoretical M. L. D. was 90 mg. per kilo, and that determined was 85 mg. per kilo. Typical and marked acute reactions were produced in all cases. Delayed deaths were not observed in these experiments but the number of surviving animals was too small to be conclusive.

TABLE 5.—*The toxicity to rats of a 0.5 per cent sulpharsphenamine solution in phosphate buffer pH 7.3, through which oxygen was bubbled for one hour at 38° C. Arsenazide content by color test=1.216 mg. per c. c. (32 per cent). Theoretical M. L. D.=90 mg. per kilo*

Rat weight	Dosage (mg. per kilo)	Time of death
80 grams.....	100	8 minutes.
94 grams.....	100	6 minutes.
100 grams.....	100	13 minutes.
104 grams.....	100	5 minutes.
86 grams.....	85	10 minutes.
90 grams.....	85	10 minutes.
94 grams.....	85	10 minutes.
94 grams.....	85	7 minutes.
102 grams.....	85	3 minutes.
102 grams.....	85	50 minutes.
92 grams.....	70	16 hours.
100 grams.....	70	8 hours.
100 grams.....	70	20 hours.
104 grams.....	70	16 hours.
84 grams.....	50	Survived.
84 grams.....	50	16 hours.
98 grams.....	50	12 hours.
100 grams.....	50	16 hours.

#### ARSENOXIDE IN THE TISSUES OF ANIMALS FOLLOWING THE INJECTION OF ARSPHENAMINES

The first difficulty to be met in this phase of the work was the satisfactory extraction of arsenoxide from tissues. When arsenoxide was added to an organ it was found impossible to recover more than a trace of it with any of the protein precipitants generally employed. Our recent experience (19) had shown that arsenoxide combines firmly with the fixed sulphydryl groups of the proteins. Further knowledge from the work of Voegtlin, Johnson, and Rosenthal (20) was at hand for the great affinity of certain heavy metals for these SH groups, particularly silver, cadmium, and lead. Experiments revealed that fairly good yields could be obtained when considerable amounts of these metals were employed along with trichloroacetic acid as a protein precipitant. Silver was the most effective and the easiest to remove from the acid solution. The technique finally employed was as follows:

Five grams of the organ is rapidly minced with fine scissors and ground with sand in a mortar for one or two minutes. Five c. c. of 20 per cent trichloroacetic acid is now added, and the mixture is ground one or two minutes longer and allowed to stand for 15 minutes. Ten c. c. of 4 per cent silver nitrate is now slowly added while stirring with



the pestle, and then 3 c. c. of methyl alcohol is added drop by drop, with stirring. The mixture is now filtered, away from bright light, into 5 c. c. of 8 per cent sodium chloride in a 25 c. c. graduated cylinder, and the final volume is recorded. This step precipitates out the silver and the solution is now filtered again, after which the naphthoquinone tests are performed upon the neutralized filtrate. Filtration should be rapid, and in both stages the filtrates should be perfectly clear and free from hemoglobin. By this procedure from 80 to 100 per cent of arsenoxide can be recovered when 2.5 to 5 mg. are added to 5 grams of organ. Standards should preferably be made up in filtrates from normal organs. Five tubes containing from 0.2 to 0.6 mg. of arsenoxide were employed. Two tenths c. c. of 50 per cent cadmium sulphate were added to both standards and unknowns.

The final filtrate usually represents a dilution such that 6 c. c. is equivalent to 1 gram of organ. Since this requires at least 0.25 mg. of arsenoxide per gram of organ to give a color reaction strong enough for quantitative determinations, it was necessary to employ maximum doses of the arspenamines in order to reach this concentration of arsenoxide in the tissues. In this connection it must be clearly brought out that the negative tests obtained in some of the following experiments do not mean that arsenoxide is absent, but that it is present in concentrations too low to be detected by this method.

#### RESULTS WITH ARSPHENAMINE

From 200 to 250 mg. per kilogram of freshly alkalized arspenamine was administered to rats by slow injection (10 to 15 minutes) into the femoral vein. The rats were killed by decapitation (to permit maximum exsanguination) at various intervals after the injection and the organs to be examined were removed immediately and treated as described in the previous paragraphs. In testing for arsenoxide in the kidneys or spleen, the corresponding organs of two rats were usually combined to give sufficient tissue for the analysis.

The results of 14 such experiments on rat livers are given in Table 6. Tests done within one hour following the injection were negative for arsenoxide. This is good substantiation of the specificity of the reaction; for Fordyce, Rosen, and Meyers (21) have shown that the maximum arsenic concentration occurs in the liver during this period. This finding is also in accord with the results of Voegtlin and Smith (5) demonstrating that a latent period of 1 to 3 hours is necessary, following the intravenous injection of arspenamine in the rat, before the trypanocidal action becomes manifest.

TABLE 6.—*Arsenoxide in liver following injection of arspenamine*

Rat weight	Dosage of arspenamine (mg. per kilo)	Interval following injection	Arsenoxide in liver (mg. per gm.)	Approximate percentage of total arspenamine
136 grams.....	250	10 minutes.....	None.	-----
136 grams.....	250	1½ hour.....	None.	-----
160 grams.....	250	1 hour.....	None.	-----
136 grams.....	200	do.....	None.	-----
140 grams.....	250	2½ hours.....	0.25	5.3
136 grams.....	250	do.....	0.35	7.0
108 grams.....	250	do.....	0.35	8.8
136 grams.....	250	3 hours.....	0.45	9.0
150 grams.....	250	do.....	0.3	6.1
200 grams.....	200	do.....	0.4	10.0
104 grams.....	250	3½ hours.....	0.5	12.0
108 grams.....	200	do.....	0.4	10.0
180 grams.....	250	4 hours.....	0.4	8.0
160 grams.....	200	4¾ hours.....	0.5	10.0

Following the injection of arspenamine, all of the tests done upon the rat liver at intervals of 2½ hours or later yielded positive reactions. The maximum concentrations occurred within 3 to 4 hours. The extracts were all tested for o-amino-phenol with negative results in every instance. Because of the large doses of arspenamine employed, the rats were usually severely ill; when fatalities occurred, these animals were usually not employed for the study.

Although the arsenic content of the spleen has been shown to be as high as or higher than that of the liver following arspenamine injections (21, 22, 23) concentrations of arsenoxide sufficient to be detected by the naphthoquinone test were not present in any of the animals studied. Tests done from ½ hour to 3 hours following the injection were all negative (Table 7). Likewise, tests done upon the kidneys and upon the blood serum of rats and rabbits following arspenamine injections were entirely negative.

TABLE 7.—*The inability to demonstrate arsenoxide in the spleen, kidneys, and blood serum, following arspenamine injections*

Animal	Organ	Dosage of arspenamine (mg. per kilo)	Interval following injection	Arsenoxide color test
Rat.....	Spleen.....	250	½ hour.....	Negative.
Do.....	do.....	250	2 hours.....	Do.
Do.....	do.....	250	3 hours.....	Do.
Do.....	do.....	250	do.....	Do.
Rat.....	Kidneys.....	250	½ hour.....	Negative.
Do.....	do.....	250	3 hours.....	Do.
Do.....	do.....	250	3¾ hours.....	Do.
Rat.....	Blood serum.....	250	3 hours.....	Negative.
Rabbit.....	do.....	200	10 minutes.....	Do.
Do.....	do.....	200	1½ hours.....	Do.
Do.....	do.....	200	do.....	Do.
Do.....	Blood plasma.....	200	2 hours.....	Do.
Do.....	do.....	200	3 hours.....	Do.

Different results were obtained with neoarsphenamine. Although a dosage one-third greater (on a basis of arsenic content) was used, no arsenoxide could be detected in the liver (Table 8). In the kidney a negative test was obtained 20 minutes after injection, while in five experiments where tests were done from 1½ to 4½ hours after injection the reactions were all positive (Table 9). The concentrations reached were similar to those in the liver following arsphenamine, but the relative weights of the kidneys made the total amounts of arsenoxide present much less. No arsenoxide could be detected in the spleen following the neoarsphenamine injections. All of the above-described extracts were tested for o-aminophenol with negative results.

TABLE 8.—*The inability to demonstrate arsenoxide in the liver and spleen following injection of neoarsphenamine in rats*

Organ	Dosage of neoarsphenamine (mg. per kilo)	Interval following injection	Arsenoxide color test
Liver.....	500	10 minutes.....	Negative.
Do.....	500	1 hour.....	Do.
Do.....	500	2 hours.....	Do.
Do.....	500	3 hours.....	Do.
Do.....	500	3½ hours.....	Do.
Do.....	500	4½ hours.....	Do.
Spleen <sup>1</sup> .....	500	2½ hours.....	Negative.
Do. <sup>1</sup> .....	500	4 hours.....	Do.

<sup>1</sup> Organs combined for the determination.

TABLE 9.—*Arsenoxide in kidneys following injection of neoarsphenamine in rats (the organs of two animals combined for each determination)*

Weight of rat	Dosage of neoarsphenamine (mg. per kilo)	Interval following injection	Arsenoxide in kidneys (mg. per gm.)	Approximate percentage of total neoarsphenamine
100}.....	500	20 minutes.....	Negative.	.....
140}.....	500	1½ hours.....	0.45	1.1
164}.....	500	2½ hours.....	.5	1.5
136}.....	500	.....do.....	.35	0.90
204}.....	500	4 hours.....	Trace.	.....
164}.....	500	4½ hours.....	0.5	1.2
160}.....				
140}.....				
114}.....				
102}.....				
130}.....				
125}.....				

#### CONTROL EXPERIMENTS

For the sake of completeness we are including some of the control experiments designed to show that any chemical changes which might be produced in the body by the action of arsenic itself, as well as the

presence of the arsphenamines in the tissues or extracts, play no part in the production of the color reaction.

1. In five experiments, from 6 to 10 mg. of arsphenamine were added to 5 gm. of freshly removed liver, which was then macerated, ground with sand, and extracted by the usual procedure. The extracts were all negative with the naphthoquinone test. Likewise, 10 mg. of neoarsphenamine added to liver gave negative results. Twenty mg. of neoarsphenamine were added to 5 gm. of kidney and treated in this manner. The filtrate gave a pale orange-yellow color with the test.

2. To 5 c. c. of the filtrate obtained from a normal liver 1.2 mg. of arsphenamine was added. A negative color test was obtained.

3. A filtrate from the kidneys of a rat injected with neoarsphenamine showed 0.5 mg. per gram of arsenoxide. The test for o-aminophenol was negative; 0.05 mg. of o-aminophenol was now added to 5 c. c. of the filtrate. A test for o-aminophenol compared to a standard showed quantitative recovery.

4. Seven rats were injected with a toxic dose (10 c. c. of n/200 solution per kilo) of arsenious oxide,  $As_2O_3$ . Naphthoquinone tests done upon the liver at 10 minutes, 2½ hours, 3 hours, 4 hours, and 18 hours, were negative. To 5 gm. of the liver removed at 3 hours and at 4 hours were added 6 mg. arsphenamine each, and extracted. The extracts were both negative.

#### DISCUSSION

The recovery of considerable amounts of arsenoxide from the liver of the rat following the injection of arsphenamine and from the kidney following neoarsphenamine, confirms the theory of Voegtlin and Smith that arsenoxide is formed from these compounds in the living body. In harmony with their view, that this compound is responsible for the trypanocidal action, is the fact that the interval of time required before arsenoxide can be demonstrated in the tissues is similar to the latent period required by these drugs before their trypanocidal action in the body is manifest.

It will also be observed from results obtained following the injection of lethal doses of arsphenamine that there is fixed in the liver an amount of arsenoxide which would be fatal if injected intravenously. This evidence supports the view of Voegtlin (6) that the toxicity of arsphenamine to the host is due to arsenoxide. Dale (24) has emphasized the importance of the slow liberation into the circulation of arsenoxide from arsphenamine as a basis for therapeutic efficiency and safety to the host. Jackson and Raap (25) showed that the severe circulatory disturbances resulting from the peripheral intravenous injection of arsphenamine were largely absent if the drug

was injected into the portal vein. The general circulatory effects and pulmonary lesions produced by arsenoxide play an important rôle in the acute toxicity of this compound and its formation from arspnenamine in certain tissues, with subsequent fixation there, would permit larger amounts to be present in the body without general toxic effects.

The actual concentrations of arsenoxide present in the tissues may be slightly higher than those obtained in our experiments, since complete recovery of arsenoxide added to an organ is not always possible. One factor that may be responsible for the incomplete recovery may be the presence of glutathione, which we have found inhibits the color reaction if present in considerable amounts. However, nitroprusside tests upon the filtrates of normal and arsenic-containing organs have been negative, which leads us to believe that under these conditions the glutathione is precipitated out by the silver used in the extraction.

The differences in distribution of arsenoxide following arspnenamine and neoarsphenamine injections are of particular interest in view of a similar distribution of the pathological changes produced by them. Arspnenamine produces lesions principally in the liver, while with neoarsphenamine the pathological changes are chiefly in the kidney (Kolmer and Lucke (26)). Since the studies of Fordyce, Rosen, and Myers (21) reveal that the concentrations of arsenic which are reached in these organs are very similar when large doses of either arspnenamine or neoarsphenamine are injected into rats, our experiments would suggest that it is not the total arsenic but the arsenic in the form of arsenoxide that plays an important part in the production of these pathological effects.

The naphthoquinone reaction can be applied as a corollary to tests of toxicity upon commercial samples of arspnenamine. We are investigating the problem of toxicity of samples of arspnenamine as related to their arsenoxide content. A future communication will be published upon this subject.

#### SUMMARY

A color reaction with 1, 2 naphthoquinone-4-sodium sulphonate has been developed which distinguishes arsenoxide (3-amino-4-hydroxyphenyl arsenious oxide) in dilute solution from all other arsenicals tested. Among all of the other compounds studied, the only one which reacts similarly is ortho-aminophenol. By a modification of the test it is possible to distinguish between these two compounds.

This test has been employed to study quantitatively the formation of arsenoxide from solutions of arspnenamine, neoarsphenamine, and sulpharsphenamine when oxygen is bubbled through them. With

arsphenamine this proceeds slowly at pH 7.3, owing to solubility factors, but rapidly at pH 9.5 or above.

With sulpharsphenamine, and particularly with neoarsphenamine, the formation of arsenoxide is very rapid at pH 7.3. The high concentrations of arsenoxide reached give evidence that with both compounds the sulphur radical is split off from the amino group during the process of oxidation.

Toxicity tests upon rats with the oxidized solutions of the arsphenamines substantiate the quantitative estimations of arsenoxide yielded by the color reaction.

A method has been developed whereby from 80 to 100 per cent of arsenoxide added to tissues can be recovered from them in protein-free extracts. With this method of extraction it has been possible to demonstrate the presence of arsenoxide in the tissues of rats following the injection of large doses of arsphenamine and neoarsphenamine.

From 10 to 12 per cent of the injected arsphenamine can be recovered as arsenoxide from the liver of the rat if the estimations are made from 3 to 4 hours after injection. No arsenoxide could be detected in other tissues after arsphenamine, although the lack of sensitivity of the test makes it possible that quantities insufficient to detect are present.

Following the injection of large doses of neoarsphenamine, arsenoxide could be recovered only from the kidney of the rat. The highest concentration of arsenoxide reached in this organ was 0.5 mg. per gram of kidney. This is comparable to the concentration reached in the liver after arsphenamine injections.

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### DEATHS DURING WEEK ENDED APRIL 2, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended April 2, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Apr 2, 1932	Correspond- ing week, 1931
Policies in force.....	73, 717, 468	75, 139, 274
Number of death claims.....	18, 540	13, 411
Death claims per 1,000 policies in force, annual rate.....	13. 1	9. 3
Death claims per 1,000 policies, first 13 weeks of year, annual rate.....	10. 4	11. 1

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 8, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr 2, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 13 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (84 cities).....	9,427	13.5	673	58	13.0	782	12.7	14.0
Akron.....	32	6.3	3	37	6.7	5	7.8	8.5
Albany.....	41	17.6	1	20	12.9	1	15.1	15.3
Atlanta.....	71	13.1	5	49	13.9	12	14.2	16.8
White.....	39	10.9	4	59	9.6	3	11.1	13.1
Colored.....	32	17.5	1	29	22.4	9	20.3	22.6
Baltimore.....	257	16.2	24	85	15.6	18	15.0	17.5
White.....	191	14.9	13	59	13.6	13	13.9	16.1
Colored.....	63	21.9	11	177	24.9	5	19.9	23.8
Birmingham.....	60	11.3	3	31	19.7	7	12.3	15.8
White.....	29	8.8	0	0	15.3	5	10.1	12.2
Colored.....	31	15.4	3	81	26.9	2	15.8	21.7
Boston.....	250	16.6	20	60	14.7	22	15.6	16.5
Bridgeport.....	35	12.4	1	18	11.3	1	12.2	13.2
Buffalo.....	191	17.0	9	43	14.4	13	14.2	15.6
Cambridge.....	33	15.1	2	41	12.8	2	14.2	13.8
Camden.....	52	22.8	4	70	15.3	2	16.1	18.2
Canton.....	25	12.1	2	50	13.2	4	10.9	11.4
Chicago.....	744	11.0	58	57	11.0	73	11.1	12.0
Cincinnati.....	140	15.8	4	26	17.2	11	16.9	18.2
Cleveland.....	229	13.0	23	75	13.5	15	12.0	12.8
Columbus.....	77	13.4	5	50	17.1	4	14.7	15.3
Dallas.....	63	11.7	4	14.5	4	11.7	12.7	
White.....	42	9.4	3	12.7	3	10.9	11.1	
Colored.....	21	22.5	1	23.1	1	15.7	20.6	
Dayton.....	47	10.3	1	14	13.5	5	11.9	12.7
Denver.....	85	15.1	2	20	15.4	5	16.9	15.9
Des Moines.....	51	18.3	4	69	9.0	1	12.6	12.4
Detroit.....	268	0.1	29	52	9.9	34	8.8	9.9
Duluth.....	26	13.3	3	87	7.2	0	10.3	11.6
El Paso.....	27	13.2	1	20.4	5	15.0	18.1	
Erie.....	28	12.3	2	42	10.6	2	12.2	11.7
Evansville.....	19	9.4	0	0	10.0	1	10.2	12.1
Fall River.....	25	11.3	1	27	14.9	2	13.1	14.1
Flint.....	35	10.8	3	44	6.0	4	9.1	7.9
Fort Wayne.....	26	11.2	3	77	10.1	0	11.1	12.0
Fort Worth.....	39	11.9	1	13.4	3	11.0	12.0	
White.....	27	9.8	1	14.5	3	10.5	11.6	
Colored.....	12	23.5	0	7.7	0	13.7	14.0	
Grand Rapids.....	36	10.8	1	17	8.2	1	9.9	9.7
Houston.....	91	14.7	6	10.3	6	11.3	11.8	
White.....	63	13.8	5	9.0	3	10.6	10.8	
Colored.....	28	17.1	1	13.8	3	13.0	14.5	
Indianapolis.....	94	13.1	2	16	12.5	5	14.1	15.5
White.....	80	12.7	2	18	11.4	4	13.6	14.9
Colored.....	14	15.9	0	20.8	1	17.8	19.9	
Jersey City.....	78	12.7	6	50	14.7	14	12.1	14.0
Kansas City, Kans.....	35	14.8	2	44	14.8	1	13.6	16.1
White.....	29	13.1	1	27	15.2	1	13.2	14.8
Colored.....	6	13.2	1	128	13.3	0	15.1	21.3
Kansas City, Mo.....	141	17.7	15	170	14.4	10	13.5	15.5
Knoxville.....	34	15.9	1	25	14.8	2	13.1	14.7
White.....	22	12.3	1	28	14.8	2	11.9	13.7
Colored.....	12	34.3	0	0	14.6	0	19.1	19.8
Long Beach.....	20	0.5	0	0	9.2	0	10.3	10.5
Los Angeles.....	277	10.5	25	74	9.2	16	11.9	11.6
Louisville.....	119	20.2	4	37	17.9	11	14.9	17.8
White.....	95	19.0	4	42	16.0	7	13.2	16.0
Colored.....	24	26.3	0	0	25.1	4	23.8	28.1
Lowell.....	35	18.3	3	78	16.1	2	15.0	15.2
Lynn.....	19	9.6	1	28	12.2	1	12.0	12.9
Memphis.....	101	20.0	11	120	22.6	14	17.2	18.3
White.....	44	14.1	3	51	19.9	6	13.6	15.3
Colored.....	57	29.6	8	241	26.6	8	23.6	22.9
Miami.....	26	11.9	4	112	9.7	1	12.8	14.4
White.....	21	12.4	1	39	8.4	0	12.1	12.6
Colored.....	5	10.3	3	302	14.4	1	15.3	17.1

See footnotes at end of table.



Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Apr. 2, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 13 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Milwaukee.....	114	9.9	8	38	9.6	11	9.6	10.9
Minneapolis.....	116	12.6	6	39	11.0	13	11.7	12.4
Nashville <sup>6</sup> .....	46	15.3	3	45	23.1	6	15.1	18.8
White.....	30	13.8	2	39	15.3	5	14.4	16.0
Colored.....	16	19.5	1	62	43.9	1	17.2	26.2
New Bedford <sup>7</sup> .....	35	16.3	3	86	13.0	6	13.8	13.3
New Haven.....	63	20.2	2	40	10.9	3	13.9	13.6
New Orleans <sup>8</sup> .....	138	15.2	10	57	18.0	19	16.0	19.4
White.....	84	13.0	4	35	15.2	7	13.5	16.0
Colored.....	54	20.5	6	98	24.8	12	22.1	27.8
New York.....	1,775	12.9	146	65	12.8	148	12.1	13.6
Bronx Borough.....	244	9.2	20	58	9.0	25	9.1	9.8
Brooklyn Borough.....	609	11.9	52	58	11.9	52	11.3	12.7
Manhattan Borough.....	691	20.3	60	86	19.9	53	18.3	20.7
Queens Borough.....	177	7.6	10	42	7.5	17	7.7	8.8
Richmond Borough.....	54	16.9	4	79	16.0	1	15.1	14.6
Newark, N. J.....	124	14.5	10	55	13.0	12	12.1	13.8
Oakland.....	66	11.5	1	13	11.1	2	11.7	12.0
Oklahoma City.....	39	9.9	0	0	16.4	7	10.4	12.1
Omaha.....	66	15.8	7	79	13.5	2	15.4	14.8
Paterson.....	38	14.3	11	200	11.3	8	13.7	10.2
Peoria.....	24	11.3	1	28	16.4	1	12.8	14.1
Philadelphia.....	747	19.7	43	66	13.7	63	13.9	16.2
Pittsburgh.....	166	12.7	18	72	15.5	15	15.0	18.0
Portland, Oreg.....	75	12.6	3	38	12.1	3	12.6	13.0
Providence.....	104	21.2	9	87	14.1	12	15.7	15.4
Richmond <sup>9</sup> .....	53	14.9	1	15	15.6	4	14.9	18.0
White.....	26	10.3	0	0	14.7	1	12.3	15.2
Colored.....	27	26.7	1	46	17.7	3	21.6	24.9
Rochester.....	78	12.2	9	86	12.4	6	12.6	14.0
St. Louis.....	286	18.0	12	46	18.2	10	14.8	18.5
St. Paul.....	59	11.0	3	32	11.5	4	11.2	11.9
Salt Lake City <sup>4</sup> .....	25	9.0	2	31	10.6	4	11.8	12.7
San Diego.....	51	10.3	0	0	17.0	3	16.6	15.7
San Francisco.....	155	12.2	5	35	12.4	5	13.9	14.6
Schenectady.....	26	14.1	3	87	10.3	1	11.5	12.2
Seattle.....	82	11.4	6	60	15.4	5	12.3	13.4
Somerville.....	31	15.2	1	40	11.9	2	10.4	11.4
South Bend.....	19	8.0	0	0	9.2	3	8.1	9.4
Spokane.....	32	14.3	1	27	13.9	0	18.0	13.3
Springfield, Mass.....	32	10.8	2	34	14.0	7	11.9	13.9
Syracuse.....	56	13.5	4	52	11.5	4	12.3	12.9
Tacoma.....	23	11.1	2	55	13.1	2	12.4	15.0
Tampa <sup>6</sup> .....	21	10.2	1	29	12.9	3	12.5	14.9
White.....	15	9.2	0	0	11.3	1	12.2	13.6
Colored.....	6	13.8	1	156	18.8	2	13.8	19.9
Toledo.....	63	10.9	6	65	13.9	7	13.0	13.9
Trenton.....	67	28.2	5	99	21.5	7	17.5	19.6
Utica.....	40	20.3	4	114	17.8	0	16.0	16.7
Washington, D. C. <sup>8</sup> .....	188	19.9	10	56	14.8	9	17.6	18.6
White.....	115	16.8	2	16	12.2	5	15.9	16.1
Colored.....	73	27.9	8	142	21.6	4	22.0	28.1
Waterbury.....	25	12.9	1	33	10.9	7	10.5	11.3
Wilmington, Del. <sup>7</sup> .....	57	28.0	3	68	16.6	4	18.3	16.8
Worcester.....	52	13.7	6	84	14.0	9	13.7	15.2
Yonkers.....	17	6.3	0	0	4.1	3	7.9	10.4
Youngstown.....	41	12.2	7	114	13.0	8	11.2	11.9

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 28; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 16; Memphis, 28; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended April 9, 1932, and April 11, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 9, 1932, and April 11, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931
<b>New England States.</b>								
Maine	1	3	7	6	246	18	0	0
New Hampshire					13	39	0	0
Vermont	3				73	3	0	0
Massachusetts	30	52	12	8	661	478	5	3
Rhode Island	5	4		1	133	40	1	0
Connecticut	6	8	19	6	112	795	2	0
<b>Middle Atlantic States:</b>								
New York	111	119	60	20	2,484	2,137	7	17
New Jersey	29	51	67	24	573	920	0	8
Pennsylvania	90	96			1,947	4,740	5	14
<b>East North Central States:</b>								
Ohio	35	52	71	115	820	852	1	2
Indiana	36	28	138	32	83	853	9	15
Illinois	104	146	85	18	649	1,650	0	27
Michigan	14	15	28	18	1,294	93	2	13
Wisconsin	3	9	390	58	1,007	682	1	4
<b>West North Central States:</b>								
Minnesota	12	7	5	1	61	137	0	2
Iowa	3	3			3	19	2	2
Missouri	15	26	34	30	60	447	1	12
North Dakota		4			52	84	0	0
South Dakota		5	2	5	14	168	0	0
Nebraska	2	16			1	7	0	1
Kansas	10	9	12	3	270	23	2	3
<b>South Atlantic States.</b>								
Delaware		3	7		2	228	0	0
Maryland	10	16	303	40	46	1,396	3	4
District of Columbia	7	6	3	3	9	373	2	0
Virginia							4	
West Virginia	16	8	367	168	419	94	5	1
North Carolina	22	20	168	32	428	1,015	1	2
South Carolina	6	4	2,262	1,153	118	105	0	4
Georgia	15	6	209	410	33	146	1	1
Florida	6	6	5	68	6	260	2	1

† Typhus fever, 10 cases: 1 case in Connecticut, 7 cases in Georgia, and 2 cases in Alabama.

‡ New York City only.

§ Week ended Friday.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 9, 1932, and April 11, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931
East South Central States:								
Kentucky.....	12		469		58	362	0	4
Tennessee.....	8	2	739	206	209	51	3	2
Alabama <sup>1</sup> .....	18	12	294	345	10	483	1	5
Mississippi.....	6	2					0	2
West South Central States:								
Arkansas.....	3	2	198	209		24	0	1
Louisiana.....	28	14	37	57	27	8	1	2
Oklahoma <sup>2</sup> .....	7	19	231	170	10	29	3	2
Texas.....	39	20	625	77	57	67	0	1
Mountain States:								
Montana.....	5	3	13		138	72	0	0
Idaho.....	1	5	3	4		5	0	1
Wyoming.....		1			4	3	0	0
Colorado.....	4	10			139	139	0	0
New Mexico.....	10	1	1	6	50	46	0	2
Arizona.....	1		9	3	2	21	0	0
Utah <sup>3</sup> .....	2			6	2	1	0	1
Pacific States:								
Washington.....	1	10		37	513	35	0	0
Oregon.....	4	6	65	72	332	113	0	1
California.....	62	70	62	100	534	1,533	5	7
Total.....	802	900	7,000	3,510	13,702	20,892	69	198

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931
New England States:								
Maine.....	0	0	21	37	0	0	0	2
New Hampshire.....	0	0	32	0	0	0	0	1
Vermont.....	0	0	7	2	3	1	0	0
Massachusetts.....	0	0	500	342	0	0	1	0
Rhode Island.....	0	0	71	56	0	0	0	0
Connecticut <sup>1</sup> .....	1	0	65	56	0	0	1	1
Middle Atlantic States:								
New York.....	1	5	1,442	932	0	5	6	16
New Jersey.....	1	0	282	247	0	0	2	3
Pennsylvania.....	3	0	578	640	0	0	7	11
East North Central States:								
Ohio.....	1	0	351	490	45	78	5	1
Indiana.....	1	0	178	320	12	91	0	2
Illinois.....	1	1	439	512	10	62	5	7
Michigan.....	1	0	436	280	13	31	11	2
Wisconsin.....	1	1	103	123	3	5	1	0
West North Central States:								
Minnesota.....	0	0	124	92	1	6	0	1
Iowa.....	0	1	36	119	27	73	3	0
Missouri.....	0	0	62	269	18	30	1	0
North Dakota.....	0	1	26	26	3	14	0	6
South Dakota.....	1	0	4	31	2	19	0	0
Nebraska.....	0	0	31	38	11	48	0	0
Kansas.....	0	1	70	65	6	116	0	2
South Atlantic States:								
Delaware.....	1	0	11	31	0	0	0	0
Maryland <sup>2</sup> .....	0	0	155	71	0	0	6	6
District of Columbia.....	1	0	23	20	0	0	0	1
Virginia.....								
West Virginia.....	1	0	26	44	3	2	1	4
North Carolina.....	0	0	44	30	1	2	6	2
South Carolina.....	0	1	9	8	0	0	7	0
Georgia <sup>3</sup> .....	0	1	7	107	0	0	11	2
Florida.....	0	0	6	2	0	1	16	3

<sup>1</sup> Typhus fever, 10 cases: 1 case in Connecticut, 7 cases in Georgia, and 2 cases in Alabama.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 9, 1932, and April 11, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931	Week ended Apr. 9, 1932	Week ended Apr. 11, 1931
<b>East South Central States</b>								
Kentucky	1	0	63	84	9	33	8	1
Tennessee	1	0	32	35	14	9	7	6
Alabama	0	0	14	16	11	16	6	3
Mississippi	0	1	13	21	23	64	2	5
<b>West South Central States</b>								
Arkansas	0	0	5	21	6	39	2	5
Louisiana	0	1	15	18	6	40	16	3
Oklahoma	0	0	28	45	5	104	1	3
Texas	0	1	62	42	113	40	3	4
<b>Mountain States</b>								
Montana	0	0	10	20	0	6	1	1
Idaho	3	1	3	9	0	4	0	2
Wyoming	0	0	6	13	0	1	2	0
Colorado	0	0	30	23	3	5	1	0
New Mexico	0	0	18	10	0	0	4	1
Arizona	0	0	11	0	0	1	1	1
Utah	0	0	8	7	0	0	0	0
<b>Pacific States</b>								
Washington	0	0	38	48	29	51	1	3
Oregon	0	0	20	9	8	21	3	3
California	0	4	161	111	7	42	10	10
<b>Total</b>	20	20	5,696	5,551	392	1,060	157	124

<sup>1</sup> Typhus fever, 10 cases. 1 case in Connecticut, 7 cases in Georgia, and 2 cases in Alabama.

<sup>2</sup> Week ended Friday.

\* Figures for 1932 are exclusive of Oklahoma City and Tulsa

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influen- za	Ma- laria	Meas- les	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<b>February, 1932</b>										
Kansas	15	81	101		520		0	245	10	7
Mississippi	2	71	3,585	1,486	24	283	2	43	119	33
<b>March, 1932</b>										
Arizona	4	11	257		7	2	1	33	1	4
Connecticut	2	25	203		978		0	546	8	1
District of Columbia	11	45	36		10	1	1	146	0	
Florida		48	30	15	16	8	1	27	1	38
Georgia	5	34	692	38	159	24	0	33		42
Iowa	8	50			13		2	263	100	7
Nebraska	3	30	112		70		0	138	43	3
New Hampshire		5					0	156		
New Mexico	3	54	709	1	380	2	0	47	2	2

<i>February, 1932</i>			
	Cases		Cases
Chicken pox:		Dysentery:	
Kansas.....	571	Connecticut (bacillary).....	3
Mississippi.....	628	Florida.....	1
Conjunctivitis:		Georgia.....	6
Kansas.....	6	German measles:	
Dengue:		Arizona.....	1
Mississippi.....	4	Connecticut.....	23
Dysentery:		Iowa.....	27
Mississippi (amebic).....	26	Impetigo contagiosa:	
German measles:		Iowa.....	1
Kansas.....	9	Lethargic encephalitis:	
Mumps:		Connecticut.....	2
Kansas.....	440	District of Columbia.....	1
Mississippi.....	179	Mumps:	
Ophthalmia neonatorum:		Arizona.....	11
Kansas.....	1	Connecticut.....	312
Mississippi.....	4	Florida.....	19
Puerperal septicemia		Georgia.....	169
Mississippi.....	31	Iowa.....	174
Scabies:		Nebraska.....	101
Kansas.....	6	New Mexico.....	32
Septic sore throat:		Ophthalmia neonatorum:	
Kansas.....	1	Connecticut.....	1
Tetanus:		Rabies in animals:	
Kansas.....	1	Connecticut.....	11
Trachoma:		Scabies:	
Kansas.....	2	Iowa.....	1
Mississippi.....	1	Septic sore throat:	
Tularaemia		Connecticut.....	24
Mississippi.....	2	Georgia.....	9
Undulant fever:		New Mexico.....	1
Kansas.....	1	Tetanus:	
Mississippi.....	1	Connecticut.....	3
Vincent's angina:		Trachoma:	
Kansas.....	12	Arizona.....	19
Whooping cough:		Tularaemia:	
Kansas.....	275	Georgia.....	2
Mississippi.....	702	Typhus fever:	
<i>March, 1932</i>		Florida.....	1
Anthrax:		Georgia.....	3
Georgia.....	1	Undulant fever:	
Chicken pox:		Connecticut.....	3
Arizona.....	178	Georgia.....	3
Connecticut.....	507	Iowa.....	4
District of Columbia.....	178	Whooping cough:	
Florida.....	45	Arizona.....	33
Georgia.....	94	Connecticut.....	679
Iowa.....	127	District of Columbia.....	90
Nebraska.....	122	Florida.....	44
New Mexico.....	49	Georgia.....	81
Conjunctivitis:		Iowa.....	102
Connecticut.....	2	Nebraska.....	48
New Mexico.....	6	New Mexico.....	79

### ADMISSIONS TO HOSPITALS FOR THE INSANE, JULY, 1930

Reports for the month of July, 1930, showing new admissions to hospitals for the care and treatment of the insane were received by the Public Health Service from 113 hospitals, located in 37 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 178,028 patients on July 31, 1930, 94,927 males and 83,101 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of July, 1930, by psychoses:

Psychoses	Male	Female	Total
1. Traumatic psychoses	18	14	32
2. Senile psychoses	166	126	292
3. Psychoses with cerebral arteriosclerosis	210	114	324
4. General paralysis	241	63	304
5. Psychoses with cerebral syphilis	37	10	47
6. Psychoses with Huntington's chorea	1	3	4
7. Psychoses with brain tumor	2	2	4
8. Psychoses with other brain or nervous disease	36	10	46
9. Alcoholic psychoses	116	13	129
10. Psychoses due to drugs and other exogenous toxins	19	9	28
11. Psychoses with pellagra	15	34	49
12. Psychoses with other somatic diseases	28	49	77
13. Manic-depressive psychoses	210	291	501
14. Involution melancholia	22	44	66
15. Dementia præcox (schizophrenia)	407	326	733
16. Paranoia and paranoid conditions	37	32	69
17. Epileptic psychoses	40	43	83
18. Psychoneuroses and neuroses	28	60	88
19. Psychoses with psychopathic personality	32	8	40
20. Psychoses with mental deficiency	64	52	116
21. Undiagnosed psychoses	131	81	212
22. Without psychosis	190	64	254
Total	2,044	1,438	3,482

During the month of July, 1930, there were 3,482 new admissions to the hospitals, 58.7 per cent of these new admissions being males and 41.3 per cent females, the ratio being 142 males per 100 females. Four hundred and sixty-six of the new admissions were reported as being undiagnosed or without psychosis. There were 3,016 new admissions for whom provisional diagnoses were made. Of these 3,016 patients, cases of dementia præcox constituted 24.3 per cent; manic-depressive psychoses, 16.6 per cent; psychoses with cerebral arteriosclerosis, 10.7 per cent; general paralysis, 9.7 per cent; and senile psychoses, 9.5 per cent. These five classes accounted for 2,138 new patients, 70.9 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on July 31, 1930.

	Male	Female	Total
Patients on books last day of month:			
In hospitals	86,452	76,186	162,638
On parole or otherwise absent but still on books	8,475	6,915	15,390
Total	94,927	83,101	178,028

Of the 178,028 patients, 8,475 males and 6,915 females were on parole or otherwise absent but still on the books at the end of the month—8.9 per cent of the males, 8.3 per cent of the females, and 8.6 per cent of the total number of patients.

### INFLUENZA CASE RATES, MARCH 13 TO APRIL 9, 1932

In the table following are presented the influenza case rates, by weeks, per 100,000 population, annual basis, in geographic groups of States, as indicated by weekly reports, for the four weeks from March 13 to April 9, 1932, and similar rates for the corresponding period of 1931. The rates are calculated in groups and as a whole on the reported cases and estimated populations of 35 States, the District of Columbia, and New York City. The States included are the same as shown for a similar table on pages 571 and 572, of the PUBLIC HEALTH REPORTS of March 4, 1932. Complete figures are not available for the States which are omitted from the table. Similar rates for the period from February 21 to March 12, 1932, are shown on page 736 of the PUBLIC HEALTH REPORTS of March 25, 1932.

*Influenza case rates per 100,000 population*

	Week ended --							
	1932				1931			
	Mar. 19	Mar. 26	Apr. 2	Apr. 9	Mar. 21	Mar. 28	Apr. 4	Apr. 11
35 States.....	615	409	453	378	252	306	239	187
New England.....	86	54	215	29	60	41	24	15
Middle Atlantic.....	206	120	93	68	46	22	38	20
East North Central.....	365	263	237	144	63	97	64	49
West North Central.....	35	42	27	27	53	51	39	20
South Atlantic.....	940	1,095	1,201	1,279	819	1,098	888	724
East South Central.....	2,481	1,344	1,417	984	456	677	418	362
West South Central.....	674	392	400	473	249	248	232	215
Mountain.....	2,057	180	132	65	58	150	451	33
Pacific.....	255	213	139	96	485	343	203	182

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,800,000. The estimated population of the 89 cities reporting deaths is more than 32,240,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended April 2, 1932, and April 4, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	862	852	
96 cities.....	306	340	748
Measles:			
46 States.....	15,729	19,091	
96 cities.....	5,504	7,185	
Meningococcus meningitis:			
46 States.....	111	154	
96 cities.....	62	86	
Pollomyelitis:			
46 States.....	20	19	
Scarlet fever:			
46 States.....	6,724	5,731	
96 cities.....	2,677	2,364	1,567
Smallpox:			
46 States.....	381	1,008	
96 cities.....	26	88	68
Typhoid fever:			
46 States.....	153	115	
96 cities.....	33	25	35
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	1,212	1,183	
Smallpox:			
89 cities.....	0	0	

*City reports for week ended April 2, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths, reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	2	0	0	1	0	43	8	4
New Hampshire:								
Concord	0	0	0		0	0	0	0
Manchester	0	0	0		2	0	0	2
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	0	1
Burlington	0	0	0		0	2	0	0
Massachusetts:								
Boston	51	27	12	1	2	65	80	26
Fall River	1	3	0	2	0	65	1	2
Springfield	26	3	0		0	38	16	1
Worcester	3	3	0	2	0	0	15	8
Rhode Island:								
Pawtucket		1						
Providence	2	7	4	1	1	97	7	13
Connecticut:								
Bridgeport	0	5	0		1	9	0	6
Hartford		4						
New Haven	16	0	0	5	3	2	3	3
MIDDLE ATLANTIC								
New York:								
Buffalo	16	10	3		2	11	1	28
New York	175	212	81	113	37	175	135	262
Rochester	6	6	0	2	0	255	5	5
Syracuse	3	3	1		0	640	3	6
New Jersey:								
Camden	5	4	0	3	6	1	1	8
Newark	41	16	4	18	2	25	44	12
Trenton	0	2	1	5	4	2	1	11
Pennsylvania:								
Philadelphia	128	57	7	37	20	5	76	97
Pittsburgh	34	14	3	3	5	290	44	24
Reading	34	2	0		1	1	2	5
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	12	7	3		7	0	0	17
Cleveland	95	23	5	70	6	814	72	22
Columbus	3	3	1	4	4	2	0	6
Toledo	11	4	1	1	1	43	3	4
Indiana:								
Fort Wayne	2	2	2		1	0	0	2
Indianapolis	14	3	1		1	12	48	10
South Bend	1	0	0		0	1	0	3
Terre Haute	0	0	1		0	0	0	2



## City reports for week ended April 8, 1932—Continued

Division, State, and city	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths, re- ported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Illinois:								
Chicago.....	99	90	27	18	10	469	21	67
Springfield.....	12	1	0	5	0	0	10	7
Michigan:								
Detroit.....	49	40	6	15	7	217	24	33
Flint.....	7	2	1	21	0	159	76	4
Grand Rapids.....	13	0	0		3	109	27	4
Wisconsin:								
Kenosha.....	3	0	0		0	0	0	0
Madison.....	12	1	1			0	0	
Milwaukee.....	91	12	2	2	2	756	26	12
Racine.....	25	2	0		0	100	70	0
Superior.....	5	0	0		0	2	25	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	0	0	1		0	1	0	3
Minneapolis.....	11	11	3		2	4	35	14
St. Paul.....	3	4	0		0	3	27	3
Iowa:								
Davenport.....	8	0	1			0	0	
Des Moines.....	0	1	2			0	0	
Sioux City.....	2	1	0			1	0	
Waterloo.....	4	0	0			1	0	
Missouri:								
Kansas City.....	12	4	6		0	0	5	24
St. Joseph.....	1	0	4		0	0	0	2
St. Louis.....	29	31	18	5	2	3	6	18
North Dakota:								
Fargo.....	1	0	0		2	35	0	0
South Dakota:								
Aberdeen.....	0	0	1			19	0	
Sioux Falls.....	0	0	0			0	0	
Nebraska:								
Omaha.....	5	3	3		0	1	3	3
Kansas:								
Topeka.....	22	0	2	2	0	0	7	1
Wichita.....	10	1	2		0	161	0	2
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	3	1		0	0	1	21
Maryland:								
Baltimore.....	103	19	3	25	7	2	31	31
Cumberland.....	0	0	0	2	1	3	0	2
Frederick.....	0	0	0	9	0	3	0	0
District of Columbia:								
Washington.....	39	12	9	3	4	3	0	21
Virginia:								
Lynchburg.....	22	1	0		0	1	0	3
Norfolk.....	16	1	3		0	0	0	2
Richmond.....	1	2	0		0	0	0	4
Roanoke.....	0	0	0		0	0	0	1
West Virginia:								
Charleston.....	2	1	2	4	0	73	0	3
Wheeling.....	1	0	0		0	4	1	2
North Carolina:								
Raleigh.....	5	0	0		0	20	0	3
Wilmington.....	0	0	0		0	0	0	2
Winston-Salem.....	20	0	1	6	0	2	3	3
South Carolina:								
Charleston.....	0	0	0	157	2	0	0	3
Columbia.....	0	0	0		0	0	0	0
Greenville.....	1	0	0		0	3	0	0
Georgia:								
Atlanta.....	3	2	1	21	1	9	1	10
Brunswick.....	3	0	0		0	0	0	0
Savannah.....	2	0	0	23	2	3	0	0

## City reports for week ended April 3, 1933—Continued

Division, State, and city	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths, re- ported
		Cases, esti- mated expec- tancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC— continued								
Florida:								
Miami.....	5	2	0	1	0	3	0	3
Tampa.....	3	1	2	2	3	0	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0		1	0	0	2
Lexington.....	4		0	2	0	15	0	2
Tennessee:								
Memphis.....	9	3	0		3		1	17
Nashville.....	1	0	1		3	0	0	5
Alabama:								
Birmingham.....	5	2	0	21	1	1	10	4
Mobile.....	1	1	0	1	1	0	0	3
Montgomery.....	2	0	0	1		0	5	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	1			0	0	
Little Rock.....	7	1	0		3	0	4	5
Louisiana:								
New Orleans.....	0	11	26	9	0	0	0	5
Shreveport.....	2	0	0		0	12	8	7
Oklahoma, Ia.								
Muskogee.....	1		0		0	5	2	0
Oklahoma City.....	0	1	4	34	0	14	5	9
Texas:								
Dallas.....	7	5	13	8	8	51	3	9
Fort Worth.....	4	4	4		2	1	0	0
Galveston.....	0	0	0		0	0	0	2
Houston.....	3	4	7		1	0	0	14
San Antonio.....	1	3	1		0	0	0	9
MOUNTAIN								
Montana:								
Billings.....	1	0	0		0	1	0	0
Great Falls.....	3	0	0	258	0	1	0	1
Helena.....	0	0	0		0	2	0	0
Missoula.....	0	0	0	2	2	0	0	2
Idaho:								
Boise.....	0	0	0		0	0	0	0
Colorado:								
Denver.....	23	7	1		4	72	32	7
Pueblo.....	28	0	0		1	0	0	3
New Mexico:								
Albuquerque.....	1	0	0		0	32	10	0
Arizona:								
Phoenix.....	0		0		0	0	0	1
Utah:								
Salt Lake City.....	39	2	1		1	1	4	1
Nevada:								
Reno.....	0	0	0		0	0	0	0
PACIFIC								
Washington:								
Seattle.....	25	2	0			341	7	
Spokane.....	12	1	0			0	0	
Tacoma.....	4	1	0		0	42	0	5
Oregon:								
Portland.....	11	6	0		2	78	6	7
Salem.....	7	0	0	1		0	2	
California:								
Los Angeles.....	166	33	26	60	0	6	31	11
Sacramento.....	32	2	1		0	66	1	9
San Francisco.....	89	12	3	1	1	208	5	13

## City reports for week ended April 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	4	4	0	0	0	0	0	0	0	5	25
New Hampshire:											
Concord.....	0	5	0	0	0	0	0	0	0	0	11
Manchester.....	2	13	0	0	0	1	0	0	0	0	19
Nashua.....	0	0	0	0	0	0	0	0	0	0	—
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	0	5
Burlington.....	1	0	0	0	0	0	0	0	0	0	—
Massachusetts:											
Boston.....	92	161	0	0	0	13	1	0	0	35	250
Fall River.....	5	5	0	0	0	1	0	0	0	2	25
Springfield.....	11	7	0	0	0	0	0	0	0	3	34
Worcester.....	11	41	0	0	0	2	0	0	0	6	82
Rhode Island:											
Pawtucket.....	2		0				0				
Providence.....	14	33	0	0	0	3	0	0	0	1	104
Connecticut:											
Bridgeport.....	12	3	0	1	0	2	0	0	0	4	35
Hartford.....	6		0				0				
New Haven.....	6	16	0	0	0	1	0	0	0	11	63
MIDDLE ATLANTIC											
New York:											
Buffalo.....	29	0	0	0	0	18	0	0	0	12	176
New York.....	343	917	1	0	0	98	8	5	0	149	1,755
Rochester.....	11	64	0	0	0	1	0	0	0	2	76
Syracuse.....	12	19	0	0	0	1	0	0	0	45	56
New Jersey:											
Camden.....	6	45	0	0	0	1	0	0	0	4	52
Newark.....	37	43	0	0	0	5	0	0	0	27	125
Trenton.....	5	9	0	0	0	7	0	0	0	6	67
Pennsylvania:											
Philadelphia.....	103	204	0	0	0	41	1	2	1	201	747
Pittsburgh.....	31	33	0	0	0	7	0	0	0	52	166
Reading.....	5	35	0	0	0	0	0	0	0	27	31
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	25	43	1	0	0	12	0	0	0	7	140
Cleveland.....	44	90	0	0	0	12	0	2	0	173	220
Columbus.....	12	8	1	6	0	10	0	1	0	46	77
Toledo.....	16	12	0	0	0	4	0	0	0	103	63
Indiana:											
Fort Wayne.....	4	5	1	0	0	0	1	0	0	8	27
Indianapolis.....	14	7	7	0	0	3	0	0	0	35	—
South Bend.....	4	4	1	0	0	0	0	0	0	1	19
Terre Haute.....	3	4	0	0	0	0	0	0	0	0	13
Illinois:											
Chicago.....	137	192	2	0	0	56	1	3	0	195	744
Springfield.....	4	2	0	0	0	1	0	0	0	5	32
Michigan:											
Detroit.....	121	167	1	0	0	26	0	1	0	132	208
Flint.....	14	11	2	0	0	0	0	0	0	12	35
Grand Rapids.....	11	9	1	0	0	2	0	0	0	1	36
Wisconsin:											
Kenosha.....	2	2	1	0	0	0	0	0	0	5	8
Madison.....	5	1	0	0			0	0		16	—
Milwaukee.....	28	35	1	1	0	7	0	0	0	134	114
Racine.....	3	1	0	0	0	1	0	0	0	8	20
Superior.....	3	0	0	0	0	0	0	0	0	0	0

## City reports for week ended April 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth	8	3	0	0	0	3	0	0	0	0	26
Minneapolis	34	42	0	0	0	1	0	0	0	40	116
St. Paul	30	12	0	0	0	0	0	0	0	16	63
Iowa:											
Davenport	2	7	2	0			0	0		0	
Des Moines	10	13	2	0			0	0		0	51
Sioux City	0	3	1	0			0	0		3	
Waterloo	2	0	1	0			0	1		6	
Missouri:											
Kansas City	25	21	1	0	0	7	0	0	0	39	141
St. Joseph	3	3	0	0	0	1	0	0	0	0	35
St. Louis	48	12	3	0	0	13	0	0	0	34	266
North Dakota:											
Fargo	1	3	0	0	0	0	0	0	0	0	6
South Dakota:											
Aberdeen	0	0	0	0			0	0		0	
Sioux Falls	1	0	0	0			0	0		0	10
Nebraska:											
Omaha	5	6	4	1	0	3	0	0	0	7	66
Kansas:											
Topeka	4	2	1	0	0	0	0	0	0	42	22
Wichita	5	1	1	0	0	0	0	0	0	3	
SOUTH ATLANTIC											
Delaware:											
Wilmington	6	15	0	0	0	0	0	0	0	4	57
Maryland:											
Baltimore	40	77	0	0	0	12	2	1	0	103	254
Cumberland	0	5	0	0	0	0	0	0	0	0	9
Frederick	0	0	0	0	0	0	0	0	0	2	5
District of Colum- bia:											
Washington	25	32	0	0	0	15	1	1	1	19	188
Virginia:											
Lynchburg	0	4	0	0	0	0	0	0	0	20	11
Norfolk	1	4	0	0	0	1	0	0	0	14	
Richmond	4	3	0	0	0	5	0	0	0	0	39
Roanoke	1	6	0	0	0	0	0	0	0	2	15
West Virginia:											
Charleston	1	0	0	0	0	0	1	0	0	7	20
Wheeling	2	2	0	0	0	0	0	0	0	16	17
North Carolina:											
Raleigh	1	0	0	0	0	0	0	0	0	1	16
Wilmington	0	0	0	0	0	0	0	0	0	3	12
Winston-Salem	1	28	1	0	0	0	0	0	0	26	16
South Carolina:											
Charleston	0	1	0	0	0	3	1	0	0	0	30
Columbia	0	0	0	0	0	0	0	0	0	0	
Greenville		3	0	0	0	0		0	0	1	
Georgia:											
Atlanta	8	2	1	0	0	1	0	0	0	2	71
Brunswick	0	0	0	0	0	0	0	0	0	0	2
Savannah	1	0	0	0	0	2	1	2	0	0	41
Florida:											
Miami	1	0	0	0	0	1	0	1	0	0	26
Tampa	1	1	0	0	0	2	1	0	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	0	0	0	1	0	0	0	0	18
Lexington		0		0	0	2		0	0	6	

## City reports for week ended April 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST SOUTH CENTRAL—con.											
Tennessee:											
Memphis.....	13	9	2	1	0	7	1	0	0	24	101
Nashville.....	3	3	0	0	0	5	0	0	0	0	46
Alabama:											
Birmingham....	4	0	1	0	0	4	1	0	0	7	60
Mobile.....	0	3	0	5	0	2	0	1	0	0	24
Montgomery....	0	1	0	0			0	0		0	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0			0	0		1	
Little Rock....	1	0	1	1	0	0	0	0	0	1	8
Louisiana:											
New Orleans....	11	7	1	0	0	10	2	0	0	0	188
Shreveport.....	1	1	1	0	0	2	0	0	1	4	34
Oklahoma:											
Muskogee.....		2		2				0		0	
Oklahoma City.....	5	8	2	2	0	1	0	0	0	8	38
Texas:											
Dallas.....	5	1	1	0	0	1	0	2	1	7	63
Fort Worth....	2	3	6	3	0	2	0	1	0	0	39
Galveston.....	0	0	0	0	0	3	0	0	0	0	15
Houston.....	1	5	2	0	0	7	0	0	0	0	91
San Antonio....	1	0	1	0	0	9	0	2	2	0	59
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	12
Great Falls....	2	0	0	0	0	0	0	0	0	0	10
Helena.....	0	0	0	0	0	0	0	0	0	0	2
Missoula.....	0	1	0	0	0	0	0	0	0	0	10
Idaho:											
Boise.....	0	0	0	3	0	0	0	0	0	0	4
Colorado:											
Denver.....	15	11	0	0	0	6	0	0	0	15	80
Pueblo.....	1	0	0	0	0	0	0	0	0	1	10
New Mexico:											
Albuquerque....	0	2	0	0	0	4	0	0	0	0	9
Arizona:											
Phoenix.....	1	0	1	0	0	5	0	0	0	0	
Utah:											
Salt Lake City.....	2	2	0	0	0	1	0	0	1	5	25
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle.....	9	5	3	1			0	3		8	
Spokane.....	6	1	8	0			0	0		1	
Tacoma.....	2	0	3	2	0	0	0	0	0	2	20
Oregon:											
Portland.....	5	5	9	6	0	1	0	0	0	3	75
Salem.....	0	0	0	0	0			0		1	
California:											
Los Angeles....	30	48	4	0	0	30	1	3	2	45	277
Sacramento....	3	0	0	0	0	4	0	0	0	5	29
San Francisco..	23	10	1	4	0	8	1	3	1	6	255

## City reports for week ended April 2, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Polymyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston.....	1	1	0	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo.....	0	3	0	0	0	0	0	0	0
New York.....	8	6	0	0	0	0	0	0	0
Rochester.....	0	0	1	0	0	0	0	0	0
New Jersey:									
Trenton.....	1	1	1	1	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	6	5	3	3	0	0	0	1	0
Pittsburgh.....	4	1	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	4	1	0	0	0	0	0	1	0
Indiana:									
Indianapolis.....	8	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	5	4	1	0	0	0	0	0	0
Michigan:									
Detroit.....	2	3	0	0	0	0	0	0	0
Grand Rapids.....	1	1	0	0	0	0	0	0	0
Wisconsin:									
Madison.....	0	0	0	0	0	0	0	1	0
Racine.....	0	1	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	1	0	0	0	0	0	0	0	0
St. Paul.....	1	0	0	0	0	0	0	0	0
Iowa:									
Des Moines.....	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	1	1	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	0	1	0	0	0	0	0	0	0
Kansas:									
Wichita.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
District of Columbia:									
Washington.....	2	0	0	0	0	0	1	0	0
West Virginia:									
Charleston.....	1	1	0	0	0	0	0	0	0
Wheeling.....	0	0	0	0	0	0	0	1	0
North Carolina:									
Raleigh.....	0	0	0	0	1	0	0	0	0
Winston-Salem.....	0	0	0	0	2	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Savannah.....	0	0	0	0	4	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	0	1	0	1	0	0	0	0	0
Alabama:									
Montgomery.....	0	0	0	0	1	0	0	0	0

See footnote at end of table.

## City reports for week ended April 2, 1933—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases esti- mated expect- ancy	Cases	Deaths
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	1	1	0	0	0
Oklahoma:									
Oklahoma City.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
Fort Worth.....	0	0	0	0	0	1	0	0	0
San Antonio.....	1	0	0	0	0	0	0	0	0
<b>MOUNTAIN</b>									
Montana:									
Great Falls.....	1	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	2	0	0	0	0	0	0	0	0
San Francisco.....	1	1	0	0	0	0	0	0	0

<sup>1</sup> Delayed report.<sup>2</sup> Dengue, 2 cases at Charleston, S. C.<sup>3</sup> Typhus fever, 3 cases: 1 case at Atlanta, Ga.; 1 case at Savannah, Ga., and 1 case at Tampa, Fla.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 2, 1932, compared with those for a like period ended April 4, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

Summary of weekly reports from cities, February 28 to April 2, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931
98 cities.....	62	73	59	65	62	65	52	78	47	53
New England.....	48	106	53	70	65	67	65	70	43	46
Middle Atlantic.....	63	61	56	67	54	64	56	63	44	48
East North Central.....	66	75	54	72	48	72	31	82	29	64
West North Central.....	49	71	74	68	95	73	55	163	78	42
South Atlantic.....	78	98	59	53	42	73	60	61	37	47
East South Central.....	35	29	46	35	12	23	6	76	6	29
West South Central.....	102	118	133	68	162	71	112	64	156	65
Mountain.....	9	61	26	26	43	17	9	87	17	44
Pacific.....	57	63	44	55	89	51	70	69	57	53

## MEASLES CASE RATES

98 cities.....	698	769	171	947	732	1,041	727	1,208	851	1,122
New England.....	1,740	909	901	1,346	860	1,527	599	1,479	863	1,106
Middle Atlantic.....	604	874	644	1,026	578	1,158	598	1,321	621	1,250
East North Central.....	919	369	936	582	1,167	558	1,203	722	1,573	726
West North Central.....	241	643	165	595	316	492	186	651	398	532
South Atlantic.....	434	2,241	286	2,758	302	3,448	232	3,885	245	3,814
East South Central.....	17	1,045	58	1,157	23	1,004	19	1,650	6	1,515
West South Central.....	287	68	99	37	40	51	158	47	208	88
Mountain.....	198	1,331	509	1,462	388	1,288	603	1,140	664	661
Pacific.....	1,313	347	1,205	367	1,443	394	1,449	519	1,262	359

## SCARLET FEVER CASE RATES

98 cities.....	475	345	481	375	488	389	478	403	414	371
New England.....	666	527	709	589	724	676	731	697	744	577
Middle Atlantic.....	777	359	799	389	786	392	755	454	632	404
East North Central.....	382	346	382	390	394	395	387	378	345	377
West North Central.....	231	492	178	518	195	389	197	580	205	585
South Atlantic.....	312	354	327	311	371	342	382	311	345	291
East South Central.....	87	406	81	482	110	467	100	364	92	399
West South Central.....	66	71	79	95	89	102	49	78	46	95
Mountain.....	156	305	172	400	215	305	233	209	129	157
Pacific.....	158	122	135	96	147	110	133	104	122	92

## SMALLPOX CASE RATES

98 cities.....	4	13	5	19	5	22	4	17	4	14
New England.....	10	0	0	0	0	0	0	0	3	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	7	15	5	9	4	8	2	7	4	9
West North Central.....	0	57	11	132	17	130	17	69	2	78
South Atlantic.....	6	0	0	0	0	0	0	4	0	2
East South Central.....	17	23	46	0	12	12	38	12	35	12
West South Central.....	7	47	0	61	13	96	0	78	3	71
Mountain.....	0	17	17	17	17	9	0	44	26	0
Pacific.....	4	12	13	41	11	43	15	22	13	16

See footnotes at end of table.



*Summary of weekly reports from cities, February 28 to April 2, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 5, 1932	Mar. 7, 1931	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931
98 cities .....	6	4	5	3	4	4	5	4	5	4
New England.....	5	5	0	0	2	2	5	2	10	2
Middle Atlantic.....	4	3	3	2	1	2	3	3	3	3
East North Central.....	6	1	1	2	2	2	3	2	4	2
West North Central.....	0	11	2	0	2	8	4	2	2	4
South Atlantic.....	20	12	25	6	2	16	12	12	8	14
East South Central.....	17	18	6	18	20	0	19	0	6	0
West South Central.....	16	0	10	14	23	10	20	7	13	10
Mountain.....	0	0	9	0	17	0	9	0	0	9
Pacific.....	0	2	8	4	2	8	6	10	17	2

## INFLUENZA DEATH RATES

91 cities .....	37	44	37	34	37	32	36	29	29	23
New England.....	17	19	19	36	10	19	17	14	19	2
Middle Atlantic.....	42	82	47	23	39	23	36	20	34	17
East North Central.....	41	48	39	28	40	28	41	25	24	16
West North Central.....	32	59	15	60	32	47	23	35	17	12
South Atlantic.....	33	73	39	57	49	49	36	32	39	40
East South Central.....	13	140	25	102	50	115	44	127	55	127
West South Central.....	71	52	37	55	61	35	84	55	40	69
Mountain.....	34	44	26	35	43	35	43	61	69	26
Pacific.....	12	34	7	36	12	34	5	41	2	14

## PNEUMONIA DEATH RATES

91 cities .....	189	194	193	191	188	184	193	180	167	171
New England.....	192	185	194	147	156	183	225	156	169	127
Middle Atlantic.....	221	229	250	214	238	216	243	220	203	223
East North Central.....	158	154	131	139	133	122	119	125	113	120
West North Central.....	241	218	215	159	192	215	230	178	204	150
South Atlantic.....	196	265	224	332	233	269	272	263	235	229
East South Central.....	169	229	182	242	201	210	201	191	194	173
West South Central.....	172	149	148	211	205	180	199	211	172	238
Mountain.....	198	131	207	235	233	122	138	131	121	137
Pacific.....	102	101	118	125	93	101	72	98	88	83

<sup>1</sup> The figures given in this table are rates for 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Columbia, S. C., and Montgomery, Ala., not included.

<sup>3</sup> Pawtucket, R. I., and Hartford, Conn., not included.

<sup>4</sup> Columbia, S. C., not included.

<sup>5</sup> Montgomery, Ala., not included.

# FOREIGN AND INSULAR

## INFLUENZA IN EUROPE

*England and Wales.*<sup>1</sup>—The number of deaths from influenza reported in 117 great towns in England and Wales, including London, fell from 292 during the week ended March 12, 1932, to 117 during the following week. The number of cases of acute primary pneumonia and acute influenzal pneumonia reported in England and Wales was 2,074 during the week ended March 5; 1,924 during the following week; and 1,718 during the week ended March 19.

*Germany.*—The accompanying table gives the number of deaths from influenza reported in 50 great towns of Germany during the 3 weeks ended March 5, 1932. The corresponding general mortality rates are also given.

Week ended—	Number of deaths from influenza	General death rate per 1,000 population
Feb. 20, 1932.....	50	11.4
Feb. 27.....	65	11.5
Mar. 5.....	76	11.4

*Switzerland*<sup>1</sup>.—The number of cases of influenza reported in Switzerland fell from 6,420 to 4,221 during the week ended March 19, 1932. In districts of over 10,000 population, 85 deaths from influenza were reported during the week ended March 12, as compared with 55 during the preceding week.

## CANADA

*Provinces—Communicable diseases—Week ended March 26, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended March 26, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island *.....						
Nova Scotia.....		22				2
New Brunswick.....						18
Quebec.....				3		3
Ontario.....	3	183	2		1	1
Manitoba.....						
Saskatchewan *.....						1
Alberta.....					2	
British Columbia.....						
Total.....	3	205	2	3	3	24

\* No case of any disease included in the table was reported during the week.

<sup>1</sup> See also PUBLIC HEALTH REPORTS, vol 47, No. 15, April 8, 1932, p. 863.

**Quebec Province—Communicable diseases—Week ended March 26, 1932.**—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended March 26, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	76	Poliomyelitis.....	3
Diphtheria.....	26	Puerperal fever.....	1
Erysipelas.....	6	Scarlet fever.....	135
German measles.....	4	Tuberculosis, pulmonary.....	95
Measles.....	260	Typhoid fever.....	18
Ophthalmia neonatorum.....	2	Whooping cough.....	23

### CHINA

**Meningitis.**—According to recent information, cerebrospinal meningitis has been reported in Hong Kong, Canton, and Macao, China, as follows:

	Cases	Deaths
<b>Hong Kong:</b>		
Two weeks ended Mar. 19, 1932.....	5	2
Week ended Mar. 26.....	3	1
Week ended Apr. 2.....	13	1
<b>Canton.</b>		
Week ended Mar. 5, 1932.....	—	1
Week ended Mar. 12.....	12	1
Week ended Mar. 19.....	7	3
Week ended Mar. 26.....	11	2
Week ended Apr. 2.....	14	1
<b>Macao.</b>		
Two weeks ended Mar. 5, 1932.....	34	10
Week ended Mar. 19.....	82	45
Week ended Mar. 26.....	94	33
Week ended Apr. 2.....	115	94

### EGYPT

**Cerebrospinal meningitis.**<sup>2</sup>—The number of cases of cerebrospinal meningitis, with deaths, reported in Egypt during the month of February, 1932, is given in the accompanying table. During the week ended March 3, 1932, there was a decrease in the number of cases reported, but the deaths numbered 200. During the first four weeks of the year, 125 of the 196 cases reported occurred in Cairo, and most of the remaining cases occurred in the provinces of Lower Egypt. Since the seasonal maximum is usually reached in April, it was thought unlikely that any further increase in the disease would take place.

Week ended—	Cases	Deaths
Feb. 4, 1932.....	77	24
Feb. 11.....	104	37
Feb. 18.....	252	89
Feb. 25.....	394	132

<sup>2</sup> See also PUBLIC HEALTH REPORTS, vol. 47, No. 15, April 8, 1932, p. 865.

## JAMAICA

*Communicable diseases—Four weeks ended March 26, 1932.*—During the four weeks ended March 26, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis.....		1	Paratyphoid fever.....		2
Chicken pox.....	24	30	Poliomyelitis.....	1	
Dysentery.....	1	3	Puerperal fever.....		2
Erysipelas.....	1		Tuberculosis.....	42	71
Leprosy.....	1		Typhoid fever.....	8	52



Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-tem-ber, 1931	December, 1931			January, 1932			February, 1932			Mar. 1-10, 1932
				1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-29	
Iraq: Amara.....	4	5	3	2									
Amara Province.....	95	35	3										
Basra.....	83	24	2										
Basra Province.....	157	78											
Diawaniyah.....	84	36											
Diawaniyah Province.....	42	10											
Iwaniyah.....	19	5											
Kut Province.....	61	23											
Mustafiq Province.....	23	15											
Nasiriyah.....	15	20											
Japan: Taiwan—Kelung.....	209	68	2										
Persia: Abadan.....	160	51	3										
Abwas.....	33	24	8										
Khormasabad.....	28	18	7										
Mohammerah.....	1	3	1										
Philippine Islands: 1 Capiz Province.....	12	103	47										
Slam: Ayedhaya Province.....	79	12	27	13	9	13	10	8	12	8			
Bangkok.....	59	9	19	19									
On vessel: S. S. Angora at Rangoon from Calcutta.....			1	1	1	1	1	1	1	1	1	1	
Indo-China (French) (see also table above):													
Annam.....	D	D											
Cambodia.....	D	D	4	2	1	1	2	2	2	2	2	2	
Cochin-China.....	D	D	0	3	3	3	2	2	2	2	2	2	P
	D	D	4	8	8	8	1	1	1	1	1	1	

<sup>1</sup> Figures for cholera in the Philippine Islands are subject to correction.

<sup>2</sup> Reports incomplete.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE

[C indicates cases; D, deaths; P, present]

Place	Sent Oct. 20- Oct. 17, 1931	Oct. 18- Nov. 12, 1931	Nov. Der. 13, 1931	Week ended—												
				December, 1931			January, 1932					February, 1932				
				19	26	1	2	9	16	23	30	6	13	20	27	March, 1932
Argentina: Cordoba Province:.....						1							1			
Azores:.....																
San Miguel Island.....			5													
Terceira Island.....			16													
Belgian Congo.....			6													
British East Africa (see also table below):																
Tanganyika.....																
Uganda.....	13								10							
Canary Islands: Palma Island—Los Llanos	5								10							
	276	218	145	28	13		9	13		14	10	7	7	1		
	270	211	138	24	15		10	13		14	6	6	5	1		
Ceylon: Colombo.....									8	3						
	4		1					4	1	2		1		1	2	1
Plague-infected rats.....	3		1					4	1	2				1	1	1
Chile: Santiago.....			1					1								
		1														
China:.....		1														
Plague-infected rats.....																
Kwang Chow Wan.....																
Shansi Province:.....																8
Shensi Province.....		P														8
Dutch East Indies:		P													P	
Java—																
Surabaya.....																
									1	1						
Tegal.....																
Java and Madura.....	325	512	702	170	151		136	121	102	127	126	144	118	1		
West Java.....	113	139	198	64	54		39	46	34	48	54	63	60	14		
	113	139	198	64	54		39	46	34	48	54	64	59	14		





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Week ended—											
				December, 1931				January, 1932				February, 1932			
				19	26	2	9	16	23	30	6	13	20	27	March, 1932
Indo-China (see table below).															
Iraq:															
Baghdad.....		2	7	1			1	2	1	1	1	1	1	5	19 26
Maudhan.....		3	2	2										1	
Madagascar (see also table below): Tamatave..		1	1	1										1	
Morocco.....	1	18	11												
Peru (see table below).	8	6													
Senegal (see table below).															
Siam.....	4	5	5	1			P	1						1	1
Spain: Hospitalet—Barcelona Province.....	3	2	2	1				1						4	1
Syria: Beirut.....	2	1												2	
Tunisia: Tunis.....	3	1													
Union of South Africa: Orange Free State.....	1		P			P		P	P	P	2				1



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**

## SMALLPOX

[C indicates cases; D, deaths; P, present]

[illegible]



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Week ended—											Apr. 2, 1932			
					January, 1932					February, 1932							March, 1932		
					16	23	30	6	13	20	27	5	12	19	26				
India—Continued.																			
Nagapatam.....	C	2	1	1								1				1			
Rangoon.....	D	1	1	1															
Tutthorin.....	D	3	3	9		35	58	39	141	104	173	172	128	163					
Viasapatam.....	D	2	1	7		8	15	10	18	46	29	34	61	57	50				
	D	4	5	8		19	9		9	5	15	7	9	4					
	D	1	1			2			2	1									
Viasapatam.....	D	6				2				1	1	1	4	4					
India (French):																			
Karikal.....	D	8	4	7															
	D	4	3	7															
Pondicherry Province.....	C	23	33	26		11	4	13	8	4	4	11	10	1					
Indo-China (see also table below):	D	21	36	25		4	6	4	13	8	4	7	10	4					
Puompenh.....	C					1			2										
Salgon and Cholon.....	C	6	7	26		23	28	43	23	38	46	33	28	54	45	71			
	D	3	5	12		18	22	35	17	24	23	23	15	48	35	60			
Iraq:																			
Baghdad.....	D			11		15	5	2	1	2	1	1	1	1	1	12			
Bassa.....	D			5		8	9	2	2	1	1	1	1	1	5	4			
	D			1		1													
Mosul Lawa.....	D			2															
Ivory Coast (see table below).	C	5																	
Japan:																			
Yokohama.....	C			1															
Kobe.....	C																		
Tokyo.....	D												1	1					
Yokohama.....	D												1						
Mexico (see also table below).	C																		
Chihuahua.....	D			1		1	20	15			55								
Guatemala.....	D																		
Salasco (State)—Guatemala.....	D	4	2	1						1	1	1	1	1					

Mexico City and surrounding territory													
Monterrey	C	7	5	10	8	3	6	5	7	9	11	6	
San Luis Potosi	D	4	1							1	2	1	
Turcon	D	1		7	2	1	3	1	1	1	2	1	1
Morocco (see table below)	D				2								
Netherlands: Friesland—Opsterland	C		11										
Nigeria	C	454	69	15		181	36						
Panama: Chiriqui	D	141	15	3		107	13						
Poland	C		2	1	1								
Portugal	C												
Lisbon	C												
Oporto	C	48	78	91	108	38	22	31	7	21	5	17	7
Straits Settlements	C			2	13	2	1		1	4	1	8	4
Slam	C												
Sudan (Anglo-Egyptian)	C												
Sweden: Malmo	D			2	2		3	1	1	3	5	1	3
Syria (see table below)	C						9						
Tunisia: Tunis	C				1								
Turkey: (See also table below) Istanbul	C								1				
Union of South Africa:	C												
Cape Province	C	P	P	P	P								
Orange Free State	C	P	P	P									
Transvaal	C												
On vessels:													
Brazilian ship Jaboatao at New Orleans from Brazil	C												
S. S. Tucuma at Manila from Shanghai	C				1								
S. S. Cressington Court at Yokohama from Shanghai	C				1								
S. S. Bollington Court at Yokohama from Shanghai	C					1							
S. S. Victoria City at Brisbane from Shanghai	C					1							
S. S. Bellisco at Mobile from Habana, Cuba, and Hull, England	C												
S. S. Francisels at Suez from Calcutta	C				1								
S. S. Uwajima Maru at Osaka from Shanghai	C								1				
S. S. President Jackson at Yokohama from San Francisco via Honolulu	C												
S. S. Hong Kiang at Singapore from Amoy, via Swatow and Hong Kong	C				1								
S. S. Hai Ning and S. S. Solviken at Hong Kong	C							1					
S. S. Mekara at Aden from Colombo	C												
S. S. Tilsdane at Hong Kong from Shanghai and Amoy	C							P		2			
S. S. Poetung at Shanghai	C												
S. S. Rajula at Penang from Negapatnam	C					1							
S. S. Mao Gulliver at Suez from Rangoon	C											11	
S. S. Tainui at Southampton from New Zealand	C												1

1 Imported case.

1 A suspected case.

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Septem-ber, 1931	Octo-ber, 1931	No-vem-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ruary, 1932	Place	Septem-ber, 1931	Octo-ber, 1931	No-vem-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ruary, 1932
	1-10	11-20	21-31	1-10	11-20	21-31		1-10	11-20	21-31	1-10	11-20	21-29
Chosen.....	9	7	2	1	1	6	Mexico (see also table above).....	565	427	152	279	483	968
France.....	1	1	6	1	3	3	Morocco.....	59	91	31	31	22	22
Guatemala.....	4	1	1	1	5	5	Turkey (see also table above).....	—	—	—	—	1	1
Indo-China (see also table above).....	C	30	47	120	41	324		144	11	107	191	145	206
Ivory Coast.....	D	13	16	22	21	55		17	11	52	55	47	98
Syria: Beirut.....	D	—	—	1	—	—		—	—	—	—	—	86
	C	—	—	1	—	—		—	2	3	—	—	—





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—												
	Sept. 17, 1931			Oct. 1, 1931			Nov. 1, 1931			Dec. 1, 1931			March, 1932
	17, 1931	18, 1931	19, 1931	17, 1931	18, 1931	19, 1931	17, 1931	18, 1931	19, 1931	17, 1931	18, 1931	19, 1931	
Mexico:													
Guadalupe													
Mexico City, including municipalities in Federal District	D	D	D	D	D	D	D	D	D	D	D	D	
San Luis Potosi	D	D	D	D	D	D	D	D	D	D	D	D	
Torreón	D	D	D	D	D	D	D	D	D	D	D	D	
Morocco	D	D	D	D	D	D	D	D	D	D	D	D	
Palestine	D	D	D	D	D	D	D	D	D	D	D	D	
Paraguay: Asuncion	D	D	D	D	D	D	D	D	D	D	D	D	
Peru	D	D	D	D	D	D	D	D	D	D	D	D	
Poland	D	D	D	D	D	D	D	D	D	D	D	D	
Portugal: Oporto	D	D	D	D	D	D	D	D	D	D	D	D	
Rumania	D	D	D	D	D	D	D	D	D	D	D	D	
Tunisia: Tunis	D	D	D	D	D	D	D	D	D	D	D	D	
Turkey (see table below)	D	D	D	D	D	D	D	D	D	D	D	D	
Union of South Africa:													
Cape Province	C	C	C	C	C	C	C	C	C	C	C	C	
Municipality of East London	C	C	C	C	C	C	C	C	C	C	C	C	
Natal	C	C	C	C	C	C	C	C	C	C	C	C	
Orange Free State	C	C	C	C	C	C	C	C	C	C	C	C	
Transvaal	C	C	C	C	C	C	C	C	C	C	C	C	
Venezuela: Caracas (see table below)	C	C	C	C	C	C	C	C	C	C	C	C	
Yugoslavia (see table below)	C	C	C	C	C	C	C	C	C	C	C	C	
On vessel: At Antofagasta, from Iquique and points north	C	C	C	C	C	C	C	C	C	C	C	C	

<sup>1</sup> Typhus fever was reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease did not spread to the coastal regions.



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		Week ended—											
		January, 1932			February, 1932				March, 1932			April, 1932	
		16	23	30	6	13	20	27	5	12	19	26	3
Gold Coast:													
Avudua.....													
Cape Coast.....													
Dagomba District.....													
Kete Krachi.....		1								P			1
Salaga.....													
Tamale.....		2											
Yapei.....		2											
Ivory Coast: Tehini.....													
Nigeria.....								1				1	
Senegal:													
St. Louis.....		1											
Thies.....		1											
Sudan (French): Macina—Kayo Circle.....		1											
Togo (French): Atakpame—Anie Circle.....													
Upper Volta:													
Barfara.....		2											
Dedougou.....		1											
Diarabekoko.....		2											
Ouagadougou.....		2											

**UNITED STATES TREASURY DEPARTMENT**

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## **SPECIAL ARTICLES**

Multiplication of Typhus Virus in the Rat Flea *X. cheopis*  
Sickness Among Male Industrial Employees, Last Quarter,  
1931



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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# PUBLIC HEALTH REPORTS

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APRIL 29, 1932

NO. 18

## TYPHUS FEVER

### THE MULTIPLICATION OF THE VIRUS OF ENDEMIC TYPHUS IN THE RAT FLEA *Xenopsylla cheopis*

By R. E. DYER, *Surgeon*, W. G. WORKMAN and E. T. CEDER, *Assistant Surgeons* and L. F. BADGER and A. RUMREICH, *Passed Assistant Surgeons, United States Public Health Service*

In previous studies we have shown that—the virus of endemic typhus is present in rat fleas taken from wild rats caught at typhus foci; the rat flea *Xenopsylla cheopis* readily becomes infected with the virus of endemic typhus when allowed to feed on typhus infected rats; infected fleas readily transmit typhus from rat to rat; the virus of typhus is present in the feces of infected fleas; typhus may be transmitted by rubbing macerated infected fleas or the feces of infected fleas into the abraded skin of guinea pigs; and that infected fleas may retain the infection for 52 days. In repeated attempts we have failed to transmit typhus by the bite of infected fleas when the feces are not allowed to come in contact with the skin of the experimental animals and we have not secured any evidence to indicate that the virus of typhus may be transmitted to the offspring of infected fleas through the egg.

If the foregoing evidence is coupled with the epidemiological evidence which shows that endemic typhus is not louse-borne, that it is associated with contact with rats, and that it has its greatest prevalence in the late summer and fall, there can be little doubt that the rat flea *X. cheopis* is the important vector of endemic typhus of the United States.

The evidence gathered to date indicates that rat fleas acquire typhus virus from rats in nature and that the virus multiplies in them.

Mooser and Castaneda have noted the absence of rickettsia in normal fleas and their presence in fleas subsequent to feeding on typhus (Mexican) infected rats, indicating to them that "an extraordinary multiplication of the virus" had taken place in the fleas.

The following experiment was designed to determine whether a multiplication of typhus virus takes place in fleas infected with endemic typhus virus or whether the flea only hoards the virus and is in reality merely a mechanical vector.

Approximately 100 young *X. cheopis* hatched from eggs of typhus-infected fleas were placed in box X 9. Eighteen of these fleas were



collected and emulsified in salt solution, and the emulsion was injected intraperitoneally into four guinea pigs. On the succeeding day 27 fleas were collected from box X 9 and, after emulsification, injected into a second group of four guinea pigs. None of the guinea pigs injected with either group of fleas developed signs of typhus.

Approximately two months later two or three hundred fleas were removed from box X 9 and placed in fresh box X 17. Three white rats in the seventh day after their intraperitoneal inoculation with endemic typhus virus (testicular washings) were then placed in box X 17 for 24 hours. These rats were then killed and placed in fresh box X 17A. As only the fleas that were on the rats at the time when the rats were killed were placed in box X 17A, it was presumed that they had all had equal chance of becoming infected. Sixteen of these fleas were then emulsified in salt solution and this entire emulsion was used in inoculating four guinea pigs intraperitoneally. A fresh rat was then placed in box X 17A to attract the fleas from the dead rats and to furnish food for these fleas. On the following day this fresh rat was killed, 16 fleas were removed and inoculated into 4 guinea pigs, and a fresh rat was placed in box X 17A. This procedure was carried out on each of eight days. The results of this test are shown in Table 1.

TABLE 1.—Results of inoculations of fleas into guinea pigs at daily intervals after the fleas had fed on typhus-infected rats for 24 hours

Reference Nos.	Days after infective feeding of fleas	Incubation period in the guinea pig, in days <sup>1</sup>	Result
<i>Guinea pigs inoculated with four fleas each</i>			
1.....	1	7	Typhus. <sup>2</sup>
2.....	1	7	Negative. <sup>3</sup>
3.....	1	10	Typhus.
4.....	1	10	Died.
5.....	2	7	Negative. <sup>3</sup>
6.....	2	5	Typhus.
7.....	2	8	Do.
8.....	2	9	Do.
9.....	3	8	Do.
10.....	3	7	Died.
11.....	3	7	Typhus.
12.....	3	7	Died.
13.....	4	7	Typhus.
14.....	4	7	Do.
15.....	4	7	Do.
16.....	4	8	Do.
17.....	5	7	Do.
18.....	5	7	Do.
19.....	5	9	Do.
20.....	5	7	Do.
21.....	6	4	Do.
22.....	6	2	Do.
23.....	6	2	Do.
24.....	6	4	Do.
25.....	7	4	Do.
26.....	7	5	Do.
27.....	7	4	Do.
28.....	7	5	Do.
29.....	8	4	Do.
30.....	8	4	Do.
31.....	8	2	Died.
32.....	8	4	Typhus. Do.

<sup>1</sup> The number of whole days of normal temperature succeeding the day of inoculation was considered the incubation period.

<sup>2</sup> The diagnosis of typhus was based on the occurrence of typical febrile and scrotal reactions.

<sup>3</sup> Subsequently tested for immunity to guinea pig passage virus (endemic typhus) and found immune.

The results shown in Table 1 indicate that for the purpose of the experiment too many fleas were used in the inoculations. The shortening of the incubation period noted in the guinea pigs, as the time lengthens between the infecting feeding of the fleas and their emulsification, is somewhat suggestive of a multiplication of virus in the flea, but the possibility of a simple hoarding of the virus can not be ruled out.

To secure data on the number of fleas or fractions of a flea which might be expected to contain sufficient virus to infect a guinea pig a preliminary titration was next made, using a group of known infected fleas without regard to the length of time they had been infected. It was found in this titration that an amount of emulsion containing one-fiftieth of a flea was sufficient to cause in a guinea pig the typical febrile reaction and scrotal involvement of endemic typhus.

Fleas from box X 18A were then chosen for a repetition of the experiment to determine the multiplication of typhus virus in fleas.

Box X 18A had originally contained infected fleas. All fleas were carefully removed from this box by introducing white rats into the box to collect the fleas and then removing the rats. The box was then left without a rat for two weeks, at the end of which time a fresh white rat was placed in the box to furnish food for newly developed fleas. Five days after the rat had been introduced into this box a few fleas were noted, and a few days later they were present in great numbers. Five fleas were then removed from box X 18A and emulsified in saline, and half of the emulsion was injected intraperitoneally into each of 2 guinea pigs. One month later 5 fleas were again taken from box X 18A and injected into 2 guinea pigs. This was repeated 2 weeks later, and at the end of another period of 2 weeks 25 fleas from the same box were emulsified and injected into 2 guinea pigs. None of the guinea pigs inoculated with fleas from this box showed any signs of typhus. One guinea pig from each pair of those injected with fleas from box X 18A was later tested for immunity to endemic typhus virus and found nonimmune.

From our failure to recover typhus virus from fleas in box X 18A after these repeated trials it was concluded that none of the fleas in this box were infected. Three white rats (5579, 5633, and 5653) were then inoculated with endemic typhus virus (testicular washings) on the 17th, 19th, and 20th of the month, respectively. On the 24th the normal rat in box X 18A was killed and a few dozen fleas were removed to a fresh box to renew our colony of noninfected fleas. Box X 18A was left without a rat until the morning of the 26th. The three white rats (5579, 5633, and 5653) previously inoculated with endemic typhus were then placed in box X 18A and allowed to remain for 24 hours. At the end of this time the three rats were removed to a fresh box (X 18E) and killed. It was presumed that all

the fleas then on the rats had fed at some time during the preceding 24 hours. Twelve fleas were then removed. Four of these fleas were smeared and stained with Giemsa. The remaining eight fleas were emulsified in 4 c c of physiological saline. From this emulsion three dilutions were made. One c c of the original emulsion and 1 c c of each of the dilutions were then inoculated intraperitoneally into two guinea pigs. This same titration was carried out on each of the following nine days, using fleas freshly collected on each day from box X 18E. On the eleventh day four additional dilutions were made and also inoculated into guinea pigs. To furnish food for the infected fleas in box X 18E and to furnish an easy means of catching fleas, a fresh rat was placed in the box each afternoon and killed the following morning. In the guinea pig inoculations made on the first 10 days of the experiment the following number of fleas or fractions of a flea were injected into the guinea pigs, 2 fleas,  $\frac{1}{2}$ ,  $\frac{1}{8}$ , and  $\frac{1}{32}$  of a flea. On the eleventh day, in addition to the above, guinea pigs were also inoculated with  $\frac{1}{128}$ ,  $\frac{1}{500}$ ,  $\frac{1}{2000}$ , and  $\frac{1}{8000}$  of a flea. Nine days later, being 20 days from the time that the fleas had been fed on the typhus-infected rats, the above amounts and also smaller fractions of a flea were inoculated into guinea pigs. The smaller fractions given on this day were  $\frac{1}{16000}$ ,  $\frac{1}{20000}$ , and  $\frac{1}{40000}$  of a flea. Forty days from the time that the fleas had fed on the typhus-infected rats there were only four fleas left. These were emulsified in salt solution, titrated in various dilutions and inoculated into guinea pigs. In this titration the same fractions of a flea were injected as in the titration made 20 days earlier, with the exception that the dilution containing  $\frac{1}{16000}$  flea per c c was discarded and an additional dilution containing  $\frac{1}{28000}$  flea per c c was added.

The results of these titrations are shown in Table 2. In this table, as in Table 1, the diagnosis of typhus was based on the occurrence of a typical febrile reaction and typical involvement of the genitalia. With two exceptions, all the guinea pigs were males of about 500 grams each.

TABLE 2.—Results of inoculations of fleas into guinea pigs at stated intervals after the fleas had fed on typhus-infected rats for 24 hours

Reference Nos.	Days after infective feeding of fleas	Incubation period in the guinea pig, in days <sup>1</sup>	Result
<i>Guinea pigs inoculated with 2 fleas each</i>			
32.....	1	.....	Died.
33.....	1	9	Typhus. <sup>2</sup>
34.....	2	8	Do.
35.....	2	.....	Died.
36.....	3	11	Typhus
37.....	3	7	Do.
38.....	4	4	Do.
39.....	4	4	Do.
40.....	5	6	Do.
41.....	5	2	Do.
42.....	6	2	Do.
43.....	6	2	Do.
44.....	7	5	Do.
45.....	7	5	Do.
46.....	8	5	Do.
47.....	8	5	Do.
48.....	9	2	Do.
49.....	9	8	Do.
50.....	10	2	Do.
51.....	10	2	Do.
52.....	11	2	Do.
53.....	11	2	Do.
54.....	20	3	Do.
55.....	20	3	Do.
56.....	40	5	Do.
<i>Guinea pigs inoculated with 1/2 flea each</i>			
57.....	1	.....	Negative. <sup>3</sup>
58.....	1	6	Typhus.
59.....	2	.....	Negative. <sup>3</sup>
60.....	2	.....	Do. <sup>3</sup>
61.....	3	13	Typhus.
62.....	3	8	Do.
63.....	4	4	Do.
64.....	4	4	Do.
65.....	5	6	Do.
66.....	5	6	Do.
67.....	5	5	Do.
68.....	6	4	Do.
69.....	7	3	Do.
70.....	7	4	Do.
71.....	8	4	Do.
72.....	8	3	Do.
73.....	9	4	Do.
74.....	9	4	Do.
75.....	10	5	Do.
76.....	10	4	Do.
77.....	11	.....	Died.
78.....	11	2	Typhus.
79.....	20	3	Do.
80.....	20	3	Do.
81.....	40	5	Do.
82.....	40	8	Do.
<i>Guinea pigs inoculated with 1/8 flea each</i>			
83.....	1	.....	Died.
84.....	1	2	Fever. <sup>1</sup>
85.....	2	.....	Negative. <sup>3</sup>
86.....	2	.....	Do. <sup>3</sup>
87.....	3	12	Typhus.
88.....	3	.....	Died.
89.....	4	6	Typhus.
90.....	4	6	Do.
91.....	5	5	Do.
92.....	5	5	Do.
93.....	6	5	Do.
94.....	6	4	Do.
95.....	7	3	Do.
96.....	7	4	Do.
97.....	8	4	Do.
98.....	8	4	Do.
99.....	9	5	Do.
100.....	9	4	Do.
101.....	10	5	Do.

See footnotes at end of table.

TABLE 2.—Results of inoculations of fleas into guinea pigs at stated intervals after the fleas had fed on typhus-infected rats for 24 hours—Continued

Reference Nos.	Days after infective feeding of fleas	Incubation period in the guinea pig, in days <sup>1</sup>	Result
<i>Guinea pigs inoculated with 1/8 flea each—Continued</i>			
102.....	10	4	Typhus.
103.....	11	3	Do.
104.....	11	4	Do.
105.....	20	3	Do.
106.....	20	5	Do.
107.....	40	8	Do.
108.....	40	9	Do.
<i>Guinea pigs inoculated with 1/52 flea each</i>			
109.....	1	—	Negative. <sup>2</sup>
110.....	1	—	Do. <sup>2</sup>
111.....	2	—	Died
112.....	2	—	Negative. <sup>2</sup>
113.....	3	—	Do. <sup>2</sup>
114.....	3	—	Do. <sup>2</sup>
115.....	4	7	Typhus.
116.....	4	7	Do.
117.....	5	—	Died.
118.....	5	6	Typhus.
119.....	6	3	Do.
120.....	6	5	Do.
121.....	7	5	Do.
122.....	7	4	Do.
123.....	8	—	Died.
124.....	8	—	Do.
125.....	9	5	Typhus.
126.....	9	5	Do.
127.....	10	5	Do.
128.....	10	4	Do.
129.....	11	5	Do.
130.....	11	5	Do.
131.....	20	3	Do.
132.....	20	5	Do.
133.....	40	5	Do.
134.....	40	11	Do.
<i>Guinea pigs inoculated with 1/128 flea</i>			
135.....	11	7	Do.
136.....	11	4	Do.
137.....	20	7	Do. <sup>4</sup>
138.....	20	6	Do.
139.....	40	6	Do.
140.....	40	6	Do.
<i>Guinea pigs inoculated with 1/500 flea</i>			
141.....	11	5	Do.
142.....	11	10	Fever (female).
143.....	20	7	Typhus.
144.....	20	5	Do.
145.....	40	9	Do.
146.....	40	11	Do.
<i>Guinea pigs inoculated with 1/2000 flea</i>			
147.....	11	8	Do.
148.....	11	10	Do.
149.....	20	8	Fever only. <sup>4</sup>
150.....	20	8	Typhus. <sup>4</sup>
151.....	40	8	Do.
152.....	40	9	Do.
<i>Guinea pigs inoculated with 1/8000 flea</i>			
153.....	11	5	Do. <sup>4</sup>
154.....	11	7	Do. <sup>4</sup>
155.....	20	—	Negative. <sup>4</sup>
156.....	20	7	Typhus. <sup>4</sup>
157.....	40	11	Fever only.
158.....	40	14	Typhus.
<i>Guinea pigs inoculated with 1/16000 flea</i>			
159.....	20	6	Do. <sup>4</sup>
160.....	20	7	Do.

See footnotes at end of table.

TABLE 2.—Results of inoculations of fleas into guinea pigs at stated intervals after the fleas had fed on typhus-infected rats for 24 hours—Continued

Reference Nos.	Days after infective feeding of fleas	Incubation period in the guinea pig, in days <sup>1</sup>	Result
<i>Guinea pigs inoculated with 1/32000 flea</i>			
161.....	20	5	Typhus.
162.....	20	5	Do.
163.....	40	8	Do.
164.....	40	11	Do.
<i>Guinea pigs inoculated with 1/84000 flea</i>			
165.....	20	7	Do. <sup>2</sup>
166.....	20	7	Fever (female). <sup>4</sup>
167.....	40	11	Typhus.
168.....	40	11	Do.
<i>Guinea pigs inoculated with 1/128000 flea</i>			
169.....	40	8	Do.
170.....	40	11	Do.
171.....	40	11	Do.

<sup>1</sup> The number of whole days of normal temperature succeeding the day of inoculation was considered the incubation period.

<sup>2</sup> The diagnosis of typhus was based on the occurrence of typical febrile and scrotal reactions.

<sup>3</sup> Subsequently tested for immunity and found non-immune.

<sup>4</sup> Subsequently tested for immunity to guinea pig passage virus (endemic typhus) and found immune.

<sup>5</sup> Sacrificed for transfer of virus. Strain established and identified as endemic typhus.

<sup>6</sup> Immunity test valueless.

The results given in Table 2 show an enormous multiplication of endemic typhus virus in infected fleas. While  $\frac{1}{2}$  flea did not contain enough virus surely to infect a guinea pig until three days after feeding on infected rats,  $\frac{1}{2}$  of a flea was sufficient to infect a guinea pig after that time. As no end point was reached in the titrations after the third day, no conclusion can be drawn as to the time at which the concentration of the virus in the flea reaches its height. As there is no definite shortening of the incubation period in the guinea pig after the fifth or sixth day from the infective feeding of the fleas, it is possible that the virus reaches its highest concentration about that time.

The guinea pigs which failed to develop typical endemic typhus and did not die and occasional animals chosen at random from those developing typical reactions were subsequently tested for immunity to known endemic typhus virus.

In order surely to identify the virus recovered from the fleas, two of the guinea pigs reacting to  $\frac{1}{32000}$  of a flea and one reacting to  $\frac{1}{64000}$  of a flea were sacrificed, and strains of virus were established in fresh animals. These strains were identified as endemic typhus strains by the following six criteria on which we have come to rely for diagnosis:

1. Typical febrile reaction and typical scrotal involvement in guinea pigs.
2. Negative blood cultures from guinea pigs at the height of their reaction.

3. Intracellular rickettsia in smears made from the tunica vaginalis of guinea pigs reacting typically.

4. The development in rabbits of agglutinins for *B. proteus* X<sub>19</sub>, type O.

5. Typical histologic lesions in the brains of guinea pigs.

6. Clear-cut cross-immunity between the unknown strain and known strains of typhus.

It will be noted that some of the guinea pigs inoculated with the flea emulsion made 40 days after the infective feeding of the fleas show a lengthened incubation period, suggesting somewhat that the concentration of virus in the flea or its infectivity reaches a maximum and then diminishes.

In the examination of smears made from fleas at the time when the daily emulsions were prepared, no rickettsia were found in smears of fleas made in the first two days after the day of the infective feeding of the fleas, while rickettsia were readily found in fleas smeared after that time.

#### CONCLUSION

Endemic typhus virus multiplies enormously in the rat flea *Xenopsylla cheopis*.

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## **SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES DURING THE LAST THREE MONTHS OF 1931, AND A SUMMARY OF SICKNESS FREQUENCY BY YEARS SINCE 1920**

By DEAN K. BRUNDAGE, *Statistician, Office of Industrial Hygiene and Sanitation, United States Public Health Service*

### **FINAL QUARTER OF 1931**

There was no increase in the frequency of disabling sickness among a large group of male industrial employees during the last three months of 1931 as compared with the corresponding period either of 1930 or of 1929; in fact, a small decrease was recorded from the rate in the fourth quarter of 1930, and a substantial decrease (17 per cent) from the frequency in the last quarter of 1929.

These sickness rates are based on cases of illness causing absence from work for a period longer than one week among the members of 27 industrial sick-benefit associations or company relief departments reporting periodically to the United States Public Health Service. The records covered about 144,000 men in the final quarter of 1931, about 154,000 in the corresponding period of 1930, and approximately 160,000 in the same period of 1929. For 1930 and 1931 the sickness rates apply to the same industrial companies, and for 1929, to 23 of the 27 companies included in 1930 and 1931.

These sickness data in the main apply to employed men, although many of them work only on a part-time basis. A small proportion are unemployed; the by-laws applicable to about one-seventh of the population under consideration state that membership may be retained during furlough or lay-off if dues are paid.

During the last three months of 1931, as in the two preceding quarter years of 1931, the frequency of nonindustrial accidents was greater than in the corresponding period of either of the two earlier years.

The respiratory-disease rate was slightly lower than in the last quarter of 1930, and considerably below the 1929 incidence. Since the beginning of 1932, however, reports of illness of a respiratory nature have become more numerous, and so it seems doubtful whether, after adjusting for seasonal variation in sickness frequency, the health of the industrial group under consideration will present such a favorable picture in the first quarter of 1932 as in the closing months of 1931.

Respiratory diseases which decreased in frequency as compared with the rate in the fourth quarter of either of the two preceding years include influenza or grippe, bronchitis (acute and chronic), pneumonia (all forms), and tuberculosis of the lungs. Each of the three periods under review is regarded as free from epidemics of a respiratory nature.



**TABLE 1.**—*Frequency of disability lasting 8 calendar days or longer in the fourth quarter of 1931, compared with the same quarter of 1930 and 1929. Male morbidity experience of 27 industrial establishments which reported their cases to the United States Public Health Service during all three years*<sup>1</sup>

Diseases and disease groups which caused disability. (Numbers in parentheses are disease title numbers from the International List of the Causes of Death, third revision, Paris, 1920)	Annual number of disabilities per 1,000 men in fourth quarter of—		
	1931	1930	1929
Sickness and nonindustrial injuries <sup>2</sup> .....	82.5	87.2	96.6
Nonindustrial injuries.....	13.6	13.0	13.1
Sickness <sup>2</sup> .....	68.9	74.2	83.5
Respiratory diseases.....	24.8	27.6	37.0
Influenza and grippé (11).....	11.1	11.6	15.1
Bronchitis, acute and chronic (99).....	3.1	4.2	6.2
Pneumonia, all forms (100, 101).....	1.6	2.5	3.1
Diseases of the pharynx and tonsils (109).....	4.7	4.3	6.8
Tuberculosis of the respiratory system (31).....	.6	.8	1.0
Other respiratory diseases (97, 98, 102-107).....	3.7	4.2	4.8
Nonrespiratory diseases.....	44.0	46.6	46.4
Diseases of the stomach, cancer excepted (111, 112).....	3.8	3.9	3.8
Diarrhea and enteritis (114).....	1.3	1.5	1.4
Appendicitis (117).....	3.5	3.4	3.8
Hernia (118a).....	1.4	2.1	1.3
Other digestive diseases (108, 110, 115, 116, 118b-127).....	2.6	2.9	2.5
Rheumatic group, total.....	10.1	10.4	12.1
Rheumatism, acute and chronic (51, 52).....	4.2	4.9	6.0
Diseases of the organs of locomotion (158).....	3.7	3.3	4.0
Neuralgia, neuritis, sciatica (82).....	2.2	2.2	3.1
Neurasthenia (part of 84).....	1.3	1.2	1.1
Other diseases of the nervous system (70-81, 83, part of 84).....	1.0	1.0	1.1
Diseases of the heart and arteries, and nephritis (87-92, 96, 128, 129).....	3.4	3.5	3.6
Other genito-urinary diseases (130-136).....	2.2	2.3	2.1
Diseases of the skin (151-154).....	3.0	3.7	3.5
Epidemic and endemic diseases except influenza (1-10, 12-25).....	1.6	1.6	1.8
Ill-defined and unknown causes (205).....	2.2	1.6	1.7
All other diseases <sup>2</sup> (26-30, 32-37, 41-50, 53-69, 85, 86, 93-95, 155-157, 160, 164).....	6.6	7.5	6.6
Average number of males covered in the record.....	143,891	154,165	160,023

<sup>1</sup> Except that the rates for 1929 cover 23 of the 27 establishments included in 1930 and 1931.

<sup>2</sup> Exclusive of disability from the venereal diseases

For nonrespiratory diseases as a whole a decrease of about 5 per cent is indicated when the computation is based on the rate for either one of the two earlier periods.

No significant decrease appears to have occurred of late in the frequency of the numerically important diseases of the digestive system. For rheumatism (acute and chronic), and for diseases of the skin, dwindling incidence rates have appeared, not only in the final period of 1931, but also in the earlier quarters of 1931 under comparison with the corresponding periods of 1930 and 1929.

The only disease category (with the exception of ill-defined and unknown causes) which shows a higher rate in the last three months of 1931 than in the same quarter of either 1929 or 1930 is neurasthenia, the rate for which has been consistently, although moderately, higher since April, 1931, than in either of the two immediately preceding years. Mention was made in earlier reports of a relatively high rate of neurasthenia in 1921. Further analyses of that rate revealed an error in the grouping of diseases of the nervous system

which unduly enhanced the neurasthenia rate. The corrected rate was not high as compared with its subsequent frequency.

#### YEAR 1931 AS A WHOLE COMPARED WITH PRECEDING YEARS

In 1931 as a whole the frequency of cases of disabling sickness of eight days and longer was slightly higher than in 1930, but still 5 or 10 per cent below the average rate for the 10 preceding years, the percentage decrease depending upon which group of establishments is considered, i. e., whether all reporting establishments, or only those which reported throughout the 11 years. Respiratory diseases as a whole decreased from the 10-year average relatively more than did total sickness. Of particular interest is the rate of sickness exclusive of influenza, because the latter caused from 14 to 28 per cent of all the cases of sickness exclusive of nonindustrial accidents during the years under review, and has not been amenable to the control measures thus far instituted. It may be observed in Table 2 that no year of record shows a lower rate of sickness exclusive of influenza than occurred in 1931. For nonrespiratory diseases as a group, the rate was slightly below the average for the preceding 10 years.

TABLE 2.—Frequency of specified causes of disability lasting eight consecutive calendar days or longer per 1,000 male industrial workers representing various industries, by years, from 1921 to 1931, inclusive

Year in which disability began	Sickness and nonindustrial injuries <sup>1</sup>		Sickness		Respiratory diseases <sup>1</sup>		Sickness exclusive of influenza		Nonrespiratory diseases		Average number of men covered in the record from all reporting establishments
	All reporting establishments	Establishments which reported throughout	All reporting establishments	Establishments which reported throughout	All reporting establishments	Establishments which reported throughout	All reporting establishments	Establishments which reported throughout	All reporting establishments	Establishments which reported throughout	
1921	90.9	86.9	82.8	79.5	34.1	32.5	69.9	68.3	48.7	47.0	66,064
1922	94.4	101.1	88.6	93.5	44.0	46.7	67.7	71.9	44.6	46.8	60,466
1923	95.1	99.5	84.1	90.9	44.3	47.7	63.4	65.7	41.8	43.3	88,910
1924	96.0	92.8	86.4	83.1	38.2	35.9	69.5	66.9	48.2	47.3	114,065
1925	105.9	95.3	95.0	55.4	44.1	39.5	73.7	67.4	50.9	46.9	114,631
1926	111.9	103.6	100.7	93.2	50.4	48.2	73.6	67.7	50.3	45.0	118,896
1927	103.7	89.5	92.3	79.2	40.2	34.4	74.6	64.7	52.1	44.8	105,468
1928	113.4	102.7	102.5	93.4	50.6	45.9	73.4	69.3	51.9	47.5	163,567
1929	112.4	101.4	99.9	89.2	47.8	41.7	73.9	68.1	52.1	47.5	194,451
1930	94.1	88.7	81.8	75.8	32.0	30.2	68.5	64.4	49.8	45.6	188,714
1931	94.6	93.7	82.2	82.4	34.9	36.9	63.3	61.2	47.3	45.5	171,694
Ten preceding years <sup>2</sup>	102.0	96.1	91.6	86.3	42.6	40.3	70.8	67.4	49.0	46.0	128,223

<sup>1</sup> Industrial accidents and the venereal diseases are not reported.

<sup>2</sup> Title numbers 11, 31, 97 to 107, and 109 in the International List of the Causes of Death, third revision, Paris, 1920.

<sup>3</sup> 1921-1930, inclusive.

During the last 11 years, the lowest influenza rates occurred in 1921 and in 1930, when this disease accounted for only 14 to 16 per cent of total illness cases exclusive of nonindustrial injuries. In 1931 the

influenza rate was considerably above this minimum, causing nearly one-fourth of all the sickness cases under consideration. A widespread influenza epidemic, it will be recalled, occurred during the first quarter of the year. It was not severe enough, however, to increase appreciably the frequency of pneumonia, and the year as a whole recorded one of the most favorable pneumonia rates experienced by the industrial population of the country since 1917.

The lowest frequency of new cases of tuberculosis of the respiratory system is shown for 1931. However, the indicated rate may be enhanced somewhat if a number of cases at present ill-defined or regarded as bronchitis are diagnosed later as tuberculosis of the lungs. But even after allowing for such a contingency, the rate would probably remain relatively low.

A remarkable decrease is indicated in 1931 for diseases of the upper respiratory tract, especially for bronchitis and for diseases of the pharynx and tonsils (chiefly tonsillitis), the rates for these diseases as well as for "other diseases of the respiratory system" being below the frequency shown for any of the preceding 10 years.

TABLE 3.—Frequency of specified respiratory diseases which caused disability for 8 consecutive calendar days or longer per 1,000 male industrial workers representing various industries, by years, from 1921 to 1931 inclusive

Year in which disability began	Diseases causing disability (numbers in parentheses are disease title numbers from the International List of the Causes of Death, third revision, Paris, 1920)											
	Influenza, grippe (11)		Bronchitis, acute and chronic (90)		Diseases of the pharynx and tonsils (100)		Pneumonia, all forms (100, 101)		Tuberculosis of the respiratory system (31)		Other diseases of the respiratory system (97, 98, 102-107)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	12.9	11.2	5.8	5.5	5.9	6.1	2.6	2.4	1.9	2.0	5.0	5.3
1922.....	20.9	21.6	5.4	6.6	5.3	5.7	3.8	3.6	1.9	1.9	6.7	7.3
1923.....	22.7	25.2	5.3	5.4	5.7	5.6	3.8	3.3	1.2	1.1	5.6	7.1
1924.....	18.9	18.2	5.0	4.5	6.4	6.3	3.1	3.1	1.3	1.3	5.5	5.5
1925.....	21.3	18.0	5.7	5.5	7.0	6.3	3.5	3.2	1.2	1.1	5.4	5.4
1926.....	27.1	25.5	4.6	7.1	7.1	6.7	3.1	3.2	1.6	1.4	4.9	4.3
1927.....	17.7	14.5	6.0	5.3	6.4	6.4	3.3	2.7	1.6	1.1	5.2	4.4
1928.....	20.1	24.1	5.7	6.0	5.9	6.1	2.4	3.4	1.1	1.2	5.4	5.1
1929.....	26.0	21.1	5.3	5.1	7.2	6.8	3.1	2.7	1.2	1.2	6.0	4.8
1930.....	13.3	11.4	4.6	4.4	6.0	6.1	2.5	2.3	1.1	1.2	4.5	4.5
1931.....	18.9	21.2	3.6	3.6	5.2	4.7	2.1	2.3	1.0	.9	4.1	4.3
Ten preceding years <sup>1</sup> .....	20.8	18.9	5.6	5.5	6.3	6.1	3.2	3.0	1.4	1.4	5.3	5.4

\*A—all reporting establishments; B—establishments which reported throughout.

<sup>1</sup> 1921-1930, inclusive.

The rate for digestive diseases as a whole was below the average rate for the preceding 10 years, but certain numerically important diseases of the digestive system failed to pursue a declining trend line. The most notable decrease as compared either with 1930 or with the 10-year average was recorded for diseases of the stomach (except cancer). A favorable rate, also, was shown for diarrhea and enteritis.

Appendicitis, however, was reported at exactly the average incidence exhibited during the preceding 10 years, and cases of hernia were more numerous than in the preceding year or in the 10-year period. For other diseases of the digestive system the 1931 rate was also relatively high.

TABLE 4.—Frequency of specified diseases of the digestive system which caused disability for eight consecutive calendar days or longer per 1,000 male industrial workers representing various industries, by years, from 1921 to 1931, inclusive

Year in which disability began	Diseases causing disability (numbers in parentheses are disease title numbers from the International List of the Causes of Death, third revision, Paris, 1920)											
	Digestive diseases, total (108, 110-127)		Diseases of the stomach except cancer (111, 112)		Diarrhea and enteritis (114)		Appendicitis (117)		Hernia (118a)		Other diseases of the digestive system (108, 110, 115, 116, 118b-127)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	13.9	14.0	4.2	4.1	2.2	2.0	3.3	3.6	2.1	2.2	2.1	2.1
1922.....	12.2	13.7	4.1	4.7	1.8	1.9	2.9	3.4	1.5	1.6	1.9	2.1
1923.....	11.4	12.5	3.9	4.0	1.8	1.8	2.9	3.5	1.2	1.5	1.6	1.7
1924.....	13.3	13.2	4.6	4.5	1.9	1.5	3.3	3.3	1.3	1.6	2.2	2.3
1925.....	14.8	14.0	5.2	5.0	1.8	1.4	3.9	3.6	1.4	1.6	2.5	2.4
1926.....	14.5	13.0	5.2	3.9	1.5	1.4	3.6	3.3	1.6	2.0	2.6	2.4
1927.....	15.1	13.6	5.0	4.1	1.4	1.2	4.5	4.3	1.6	1.5	2.6	2.5
1928.....	14.6	14.5	4.7	3.7	1.3	1.5	4.2	4.7	1.8	2.0	2.6	2.6
1929.....	15.6	15.8	4.7	4.7	1.5	1.7	4.5	4.5	1.8	2.0	3.1	2.9
1930.....	14.8	14.4	4.7	4.4	1.5	1.4	4.0	3.7	1.7	2.1	2.9	2.8
1931.....	13.4	13.5	4.0	3.0	1.2	1.5	3.7	3.8	1.8	2.2	2.7	3.0
10 preceding years <sup>1</sup> .....	14.0	13.9	4.6	4.3	1.7	1.6	3.7	3.8	1.6	1.8	2.4	2.4

\* A—all reporting establishments; B—establishments which reported throughout.

<sup>1</sup> 1921-1930, inclusive.

The incidence rate of nonrespiratory, nondigestive diseases was below the annual average frequency from 1921 to 1930. Within this very broad class of diseases, however, certain subgroups showed rates in 1931 which were in excess of the 10-year average. Among these were certain diseases of the circulatory system, especially diseases of the heart, diseases of the genito-urinary system and annexa (except nephritis), and diseases of the nervous system.

On the favorable side, attention should be called to the decrease in the frequency of rheumatism (acute and chronic), diseases of the skin, and the epidemic and endemic disease group exclusive of influenza. In the last-named group are typhoid, smallpox, measles, whooping cough, diphtheria, mumps, erysipelas, and other important epidemic and endemic diseases which as a group decreased in frequency in 1931 in the population under consideration.

**TABLE 5.—Frequency of specified nonrespiratory, nondigestive diseases which caused disability for eight consecutive calendar days or longer per 1,000 male industrial workers representing various industries, by years, from 1921 to 1931, inclusive**

Year in which disability began	Diseases causing disability (numbers in parentheses are disease title numbers from the International List of the Causes of Death, third revision, Paris, 1920)									
	Nonrespiratory, nondigestive total		Diseases of the circulatory system except diseases of the veins (87-92, 94-96)		Diseases of the veins (93)		Diseases of the heart (87-90)		Nephritis, acute and chronic (128, 129)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	34.8	33.0	2.4	1.8	1.7	2.1	1.6	1.6	0.7	0.6
1922.....	32.4	33.1	2.0	1.9	1.8	2.1	1.3	1.2	.8	.8
1923.....	30.4	30.7	1.8	1.7	1.3	1.5	1.2	1.0	.8	.8
1924.....	34.9	34.0	2.3	2.4	1.3	1.4	1.5	1.5	.7	.9
1925.....	36.1	31.9	2.8	2.7	1.7	1.6	1.7	1.5	.7	.7
1926.....	35.8	32.0	2.8	2.4	1.5	1.6	1.9	1.7	.8	.5
1927.....	37.0	31.2	3.2	2.9	1.5	1.2	2.1	1.9	.8	.7
1928.....	37.3	33.0	3.4	3.3	1.7	1.8	2.1	2.2	.8	.7
1929.....	36.5	31.7	3.4	3.4	1.7	1.6	2.2	2.3	.8	.7
1930.....	35.0	31.2	3.4	3.3	1.6	1.8	2.1	2.0	.7	.6
1931.....	33.9	32.0	3.2	3.5	1.8	1.4	2.0	2.4	.7	.6
Ten preceding years <sup>1</sup> .....	35.0	32.1	2.8	2.6	1.6	1.7	1.8	1.7	.8	.7
	Other diseases of the genito-urinary system and annexa (130-136)		Neuralgia, neuritis, sciatica (82)		Neurasthenia and the like (part of 84)		Other diseases of the nervous system (70-81, 83, part of 84)		Diseases of the eye (88)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	1.8	1.8	1.6	1.5	1.3	1.3	1.2	1.1	0.8	0.7
1922.....	1.8	1.8	2.3	2.5	1.5	1.7	.8	.7	.9	.9
1923.....	1.5	2.0	1.6	1.8	1.2	1.3	.7	.6	.9	.8
1924.....	2.0	1.8	2.3	2.1	1.6	1.9	.7	.8	1.2	1.0
1925.....	1.9	1.8	2.0	1.6	1.8	1.9	.8	.8	1.0	.9
1926.....	2.1	2.0	2.1	1.8	1.6	1.8	.8	.6	1.3	1.1
1927.....	2.2	1.7	2.3	1.6	1.4	1.7	1.0	.8	1.4	1.0
1928.....	2.2	2.1	2.2	1.6	1.4	1.6	1.0	1.0	1.1	1.0
1929.....	2.2	2.1	2.5	2.0	1.3	1.7	1.1	.9	1.0	.8
1930.....	2.4	2.2	2.3	1.6	1.2	1.5	1.0	1.0	1.1	1.0
1931.....	2.3	2.5	2.1	2.0	1.5	1.9	1.1	1.0	1.0	1.1
Ten preceding years <sup>1</sup> .....	2.0	1.9	2.1	1.8	1.4	1.7	.9	.8	1.1	.9
	Diseases of the ear and of the mastoid process (86)		Rheumatism, acute and chronic (51, 52)		Lumbago and other diseases of the organs of locomotion (158)		Diseases of the skin (161-164)		Epidemic and endemic diseases except influenza (1-10, 12-25)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	0.6	0.5	5.6	4.6	3.0	2.3	3.6	3.6	2.6	2.7
1922.....	.5	.5	4.6	4.2	3.4	3.3	3.6	3.6	2.1	2.2
1923.....	.4	.5	4.7	4.4	2.7	2.8	3.3	2.8	2.4	2.7
1924.....	.5	.5	6.5	6.5	3.2	2.7	3.5	2.8	3.4	3.4
1925.....	.8	.8	6.4	5.2	3.3	2.1	3.5	2.9	3.4	3.0
1926.....	.7	.7	5.8	4.9	3.8	2.8	3.8	3.0	2.5	2.0
1927.....	.5	.6	6.3	5.1	3.5	2.7	4.7	3.1	2.4	2.3
1928.....	.7	.8	6.4	5.4	4.0	2.8	4.4	3.2	2.7	1.8
1929.....	.7	.6	5.6	4.8	3.9	2.8	4.2	3.0	2.6	1.6
1930.....	.5	.4	5.6	4.8	3.5	2.3	3.8	3.0	2.6	1.8
1931.....	.7	.8	5.4	4.7	3.3	2.2	3.2	2.7	2.2	1.9
Ten preceding years <sup>1</sup> .....	.6	.6	5.7	5.0	3.4	2.7	3.8	3.1	2.7	2.3

\* A—all reporting establishments; B—establishments which reported throughout.

<sup>1</sup> 1921-1930, inclusive.

**TABLE 5.—Frequency of specified nonrespiratory, nondigestive diseases which caused disability for eight consecutive calendar days or longer per 1,000 male industrial workers representing various industries, by years, from 1921 to 1931, inclusive—Continued**

Year in which disability began	Diseases causing disability (numbers in parentheses are disease title numbers from the International List of the Causes of Death, third revision, Paris, 1920)									
	Cancer—all forms (43-49)		Other general diseases (26-30, 32-37, 41, 42, 50, 53-59)		Diseases of the bones and joints (155, 156)		Ill-defined and unknown causes of disability (205)		Nonindustrial injuries (165-203)	
	A*	B*	A*	B*	A*	B*	A*	B*	A*	B*
1921.....	0.6	0.6	3.5	3.7	2.0	2.1	1.8	2.0	8.1	7.4
1922.....	.6	.6	2.2	2.0	1.5	1.8	2.0	2.5	7.8	7.6
1923.....	.5	.4	2.0	2.2	1.5	1.6	3.1	2.8	9.0	8.6
1924.....	.6	.7	2.3	2.0	.6	.5	2.2	2.6	9.6	9.7
1925.....	.6	.6	2.5	2.4	.6	.6	2.8	2.3	10.9	9.9
1926.....	.8	.9	2.5	2.7	.6	.7	2.3	2.5	11.2	10.4
1927.....	.7	.7	2.6	2.5	1.0	.5	1.5	2.1	11.4	10.3
1928.....	.4	.4	2.5	3.2	.7	.6	1.7	1.7	10.9	9.3
1929.....	.4	.4	2.5	2.8	.8	.4	1.8	2.1	12.5	12.2
1930.....	.5	.5	2.4	3.0	.7	.6	1.7	1.8	12.3	12.9
1931.....	.6	.5	2.3	3.0	.6	.7	1.9	1.5	12.4	11.3
Ten preceding years <sup>1</sup> .....	.6	.6	2.5	2.6	1.0	.9	2.0	2.2	10.4	9.8

\* A—all reporting establishments; B—establishments which reported throughout.

<sup>1</sup> 1921-1930, inclusive.

## DEATH RATES IN A GROUP OF INSURED PERSONS

### Rates for Principal Causes of Death for February, 1932

The accompanying table is taken from the Statistical Bulletin for March, 1932, issued by the Metropolitan Life Insurance Co., and presents the mortality record of the industrial insurance department of the company for February, 1932, as compared with that for the preceding month and for February, 1931. It also presents a comparison of the cumulative death rates for January-February for the two years. The rates in this group of insured persons in recent years are based on numbers varying between 17,000,000 and 19,000,000. The annual general death rate for this group in the past few years has averaged about 72 per cent of the death rate for the registration area of the United States.

The Bulletin states:

The unprecedentedly favorable health conditions which prevailed in January continued throughout February. In the former month the death rate was 7.6 per cent below the previous low point; in February it was 7.8 per cent under the former February minimum. In Canada and in the far western section of the United States, the cumulative death rates of insured wage earners at the end of February were also lower than ever before, at this time of the year. Such reports as are available for the general population of the United States supplement those for this group of policyholders and show that depression and unemployment have not yet seriously affected the public health. Nowhere in the United States or Canada has there been, this year, widespread prevalence of any epidemic

disease. There has been much sickness from influenza, it is true; but in only a few instances has the disease been of the type which runs quickly into pneumonia and causes death. In fact, we have never before experienced in January and February as low pneumonia mortality rates as those which have prevailed during these months in 1932.

With respect to the more important causes of death, the situation is, for the most part, impressively favorable. The principal epidemic diseases of childhood, with the exception of diphtheria, show lower death rates than at this time last year; and diphtheria has registered the same figure as at this time in 1931—which was the lowest ever recorded for this disease. The tuberculosis mortality rate has improved by nearly 14 per cent. With this favorable start, we may confidently look forward to the attainment of another new minimum in tuberculosis mortality this year. With diabetes, for the first time since 1924, there appears to be reason to expect a break in the series of continuously increasing mortality rates. The death rate from cardiac diseases has dropped 9.4 per cent as compared with that for the January-February period of 1931; that for cerebral hemorrhage, 8.7 per cent; that for pneumonia 37.4 per cent; for diarrhea and enteritis, 19.8 per cent; for chronic nephritis, 6 per cent; and for accidents, 11.1 per cent.

The unfavorable items are cancer and automobile fatalities. For the former, the year-to-date death rate is nearly 3 per cent higher than at this time in 1931, during which year cancer mortality increased sharply to a new maximum. There have been more automobile fatalities than ever before during the like period of any year.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial insurance department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	February, 1932	January, 1932	February, 1931	Cumulative, January-February	
				1932	1931
Total, all causes.....	878.6	870.0	1,034.4	874.2	1,010.9
Typhoid fever.....	1.5	1.5	1.3	1.5	1.4
Measles.....	2.4	2.2	3.0	2.3	2.5
Scarlet fever.....	3.6	2.3	4.1	3.0	3.7
Whooping cough.....	3.4	2.7	4.6	3.1	4.3
Diphtheria.....	6.5	6.1	5.7	6.3	6.3
Influenza.....	22.5	15.5	58.6	18.9	43.8
Tuberculosis (all forms).....	70.0	67.7	81.9	68.6	79.6
Tuberculosis of respiratory system.....	63.0	60.1	72.3	61.5	71.6
Cancer.....	86.9	83.4	84.0	85.1	82.7
Diabetes mellitus.....	22.3	22.1	25.3	22.2	24.3
Cerebral hemorrhage.....	61.7	65.7	64.2	63.8	60.9
Organic diseases of heart.....	158.1	156.7	171.9	157.4	173.9
Pneumonia (all forms).....	84.3	83.6	146.7	84.0	134.2
Other respiratory diseases.....	12.3	10.6	15.1	11.4	14.4
Diarrhea and enteritis.....	7.8	8.5	9.1	8.1	10.1
Bright's disease (chronic nephritis).....	68.0	72.6	75.1	70.4	74.9
Puerperal state.....	11.4	9.9	10.9	10.6	11.0
Suicides.....	10.4	8.7	9.3	9.5	8.8
Homicides.....	6.3	6.2	5.6	6.2	6.2
Other external causes (excluding suicides and homicides).....	44.6	53.0	51.5	49.0	55.1
Traumatism by automobiles.....	15.7	23.3	15.3	19.6	18.7
All other causes.....	194.5	190.7	206.5	192.5	208.6

<sup>1</sup> All figures in this table include insured infants under 1 year of age. The rates for 1931 and 1932 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Tularæmia held compensable under workmen's compensation act.*—(Kentucky Court of Appeals; Great Atlantic and Pacific Tea Co. v. Sexton, 46 S. W. (2d) 87; decided Feb. 2, 1932.) In a negligence action brought to recover damages, it was alleged that the plaintiff, while an employee of a meat market, contracted tularæmia in the course of his work of skinning and dressing rabbits. At the time the plaintiff dressed the rabbits, he had a small abrasion or scratch on one of his fingers. A jury returned a verdict in plaintiff's favor and, from the judgment based thereon, the company operating the meat market appealed.

The court of appeals, in passing on the matter, said that there was for determination the question of whether or not the injury was compensable under the workmen's compensation act. The pertinent portion of such act read as follows:

This act \* \* \* shall affect the liability of the employers subject thereto to their employees for personal injuries sustained by the employee by accident arising out of and in the course of his employment or for death resulting from such accidental injury: *Provided, however,* That personal injury by accident, as herein defined, shall not include diseases, except where the disease is the natural and direct result of a traumatic injury by accident. \* \* \*

The court, after considering the meaning of the word "accident," reached the conclusion that the injury in the instant case "was sustained by accident" within the meaning of the compensation law, and then turned to the question of whether the disease was the "natural and direct result of traumatic injury" within the meaning of the compensation statute. In this connection there was quoted a definition of "trauma" by Webster as being "a wound or injury directly produced by causes external to the body," and concerning this the court said:

It will be noted that this does not include within its scope and meaning only physical force in the sense of a blow, a current of electricity, or like terms implying power, vigor, violence, or energy in the commonly accepted meaning of its terms, but may be as consistently construed to include any independent influence or cause external to the body coming into direct contact with and causing injury to the physical structures thereof.

It was pointed out that the injury in the present case could be traced directly to the employee's coming in contact with meats laden with tularæmia germs; that the time, place, and cause of the injury were determinable with reasonable certainty; that, as an immediate result of the contact, symptoms peculiar to the disease manifested themselves; and that it was not a gradual development arising out of natural dangers incident to the employment but was sudden, unexpected, and unusual, without any of the distinctive features of an occupational disease. The conclusion reached by the court was that



the employee's disease was "the natural and direct result of traumatic injury by accident sustained while in the course of his employment."

The judgment of the lower court was reversed and the cause remanded for another trial and proceedings consistent with the opinion.

## DEATHS DURING WEEK ENDED APRIL 9, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended April 9, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Apr. 9, 1932	Correspond- ing week, 1931
Policies in force.....	73, 744, 524	75, 140, 465
Number of death claims.....	15, 945	17, 335
Death claims per 1,000 policies in force, annual rate...	11.3	12.0
Death claims per 1,000 policies, first 14 weeks of year, annual rate .....	10.5	11.2

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 9, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr. 9, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 14 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	8, 927	12.7	648	84	13.2	793	12.7	13.9
Akron.....	34	6.7	1	12	11.1	7	7.7	6.6
Albany.....	36	14.4	2	41	18.6	3	15.0	15.6
Atlanta.....	98	18.1	6	58	15.6	14	14.5	16.8
White.....	55	15.3	6	88	11.3	8	11.4	12.0
Colored.....	43	23.5	0	0	24.1	6	30.5	23.7
Baltimore.....	226	14.4	12	42	16.0	21	14.9	17.4
White.....	174	13.6	5	23	14.9	17	13.9	16.0
Colored.....	52	18.1	7	113	20.6	4	19.8	23.6
Birmingham.....	59	11.1	3	31	15.9	8	12.2	16.8
White.....	28	8.5	2	33	11.9	1	10.0	12.2
Colored.....	31	15.4	1	27	22.4	7	15.8	21.7
Boston.....	244	16.2	22	66	14.8	19	15.7	16.4
Bridgeport.....	34	12.1	4	71	12.4	4	12.2	13.1
Buffalo.....	186	16.7	19	91	14.6	15	14.3	15.5
Cambridge.....	31	14.2	3	62	16.0	3	14.2	14.0
Camden.....	46	21.1	6	106	16.7	3	16.4	16.1
Canton.....	22	10.6	1	25	11.2	2	10.8	11.4
Chicago.....	692	10.3	44	43	11.5	70	11.0	12.0
Cincinnati.....	147	16.6	17	109	19.3	9	16.9	18.3
Cleveland.....	242	13.7	18	58	12.8	15	12.1	13.8
Columbus.....	102	17.8	3	30	15.7	6	14.9	15.3
Dallas.....	64	11.8	6	-----	12.6	9	11.7	12.7
White.....	46	10.3	5	-----	12.5	7	10.9	11.2
Colored.....	18	19.3	1	-----	13.2	2	18.0	20.6
Dayton.....	54	11.9	4	57	11.7	5	11.9	12.6
Denver.....	85	15.1	7	69	14.7	5	14.8	15.6
Des Moines.....	38	13.6	3	51	9.4	3	12.7	12.2
Detroit.....	270	8.2	20	36	9.3	26	8.7	9.8
Duluth.....	20	10.3	1	29	16.9	3	10.3	13.0
El Paso.....	38	18.6	3	-----	14.9	6	15.3	17.8
Erie.....	36	15.8	2	64	12.8	3	12.4	11.6
Evansville.....	24	11.8	3	100	12.0	1	10.9	13.1
Fall River.....	33	15.0	3	80	14.6	2	12.3	14.0

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 9, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr. 9, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 14 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Flint.....	32	9.8	6	88	6.4	3	9.1	7.8
Fort Wayne.....	30	12.9	2	52	14.9	0	11.2	12.2
Fort Worth <sup>3</sup> .....	24	7.4	1	---	14.3	7	10.7	12.2
White.....	21	7.6	1	---	14.5	7	10.3	11.8
Colored.....	3	5.9	0	---	13.4	0	13.1	14.0
Grand Rapids.....	23	7.2	1	17	9.4	4	9.7	9.7
Houston <sup>4</sup> .....	68	11.0	5	---	10.3	3	11.2	11.7
White.....	16	10.1	5	---	10.1	3	10.6	10.8
Colored.....	22	13.4	1	---	10.7	0	13.1	14.3
Indianapolis <sup>4</sup> .....	101	14.1	6	49	15.4	4	14.1	15.3
White.....	88	11.0	5	46	14.8	4	13.6	13.9
Colored.....	13	14.7	1	69	19.6	0	17.5	19.9
Jersey City.....	73	11.9	5	41	13.4	10	12.1	14.0
Kansas City, Kans. <sup>4</sup> .....	28	11.8	2	44	12.7	0	14.5	15.8
White.....	19	9.9	1	27	11.0	0	13.0	14.5
Colored.....	9	19.9	1	128	20.0	0	15.4	21.2
Kansas City, Mo.....	110	13.8	4	45	13.8	10	13.5	15.4
Knoxville <sup>4</sup> .....	23	10.7	0	0	12.9	4	12.9	14.6
White.....	18	10.1	0	0	10.8	3	11.8	13.5
Colored.....	5	14.3	0	0	23.4	1	18.8	20.1
Long Beach.....	25	8.1	3	79	14.4	0	10.1	10.8
Los Angeles.....	239	9.0	15	44	11.4	33	11.7	11.6
Louisville <sup>4</sup> .....	75	12.7	1	9	17.8	5	14.7	17.9
White.....	62	12.4	1	10	16.6	5	13.2	16.0
Colored.....	13	14.2	0	0	24.0	0	23.1	27.8
Lowell <sup>1</sup> .....	27	14.1	1	26	10.4	1	14.9	14.9
Lynn.....	35	17.8	3	85	7.1	3	12.4	12.5
Memphis <sup>4</sup> .....	86	17.1	7	76	15.9	5	17.2	18.1
White.....	39	12.5	2	34	15.7	1	13.0	15.3
Colored.....	47	24.4	5	151	16.3	4	23.9	22.4
Miami <sup>4</sup> .....	29	13.3	3	84	16.2	3	12.8	14.5
White.....	18	10.6	1	39	13.2	2	12.0	13.6
Colored.....	11	22.7	2	201	26.8	1	15.8	17.8
Milwaukee.....	100	8.7	12	57	9.6	9	9.5	10.8
Minneapolis.....	99	10.7	7	46	11.7	18	11.6	12.3
Nashville <sup>4</sup> .....	57	19.0	5	75	18.4	5	15.4	18.8
White.....	34	15.6	3	59	18.5	3	14.5	16.2
Colored.....	23	28.0	2	125	18.3	2	17.9	25.7
New Bedford <sup>1</sup> .....	22	10.2	4	115	14.4	6	13.5	13.4
New Haven.....	42	13.5	5	100	16.7	3	13.8	13.8
New Orleans <sup>4</sup> .....	149	16.4	12	68	17.8	20	16.0	19.3
White.....	97	15.0	6	32	13.0	9	13.6	15.8
Colored.....	52	19.8	6	98	29.8	11	21.9	28.0
New York.....	1,607	11.6	128	57	11.9	130	12.0	13.5
Bronx Borough.....	210	7.9	14	40	8.5	9	8.9	9.7
Brooklyn Borough.....	540	10.5	35	39	10.9	62	11.2	12.6
Manhattan Borough.....	630	18.5	57	81	18.6	48	18.3	20.6
Queens Borough.....	186	8.0	20	83	7.5	9	7.7	8.7
Richmond Borough.....	41	12.8	2	39	11.8	2	14.9	14.4
Newark, N. J.....	97	11.3	6	33	13.9	5	12.1	13.8
Oakland.....	54	9.4	5	63	10.0	2	11.6	11.9
Oklahoma City.....	39	9.9	2	27	15.6	10	10.4	12.4
Omaha.....	53	12.7	4	45	12.3	6	15.2	14.6
Paterson.....	59	22.2	5	91	12.8	5	14.3	16.0
Peoria.....	21	9.9	1	28	13.0	2	12.6	14.0
Philadelphia.....	632	16.7	41	63	16.3	47	14.1	16.2
Pittsburgh.....	192	14.7	14	64	17.4	23	15.0	18.0
Portland, Oreg.....	62	10.4	1	13	10.2	5	12.5	12.8
Providence.....	78	15.9	9	87	13.7	3	15.7	15.3
Richmond <sup>4</sup> .....	51	14.4	3	45	19.5	6	14.9	18.1
White.....	34	13.4	2	45	17.0	1	12.4	15.4
Colored.....	17	16.8	1	46	23.7	5	21.3	24.8
Rochester.....	96	15.0	6	57	13.7	9	12.8	14.0
St. Louis.....	273	17.1	15	54	16.4	21	15.0	18.4
St. Paul.....	59	11.0	7	75	10.2	2	11.3	11.8
Salt Lake City <sup>4</sup> .....	24	8.6	1	16	16.8	0	11.6	12.6

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 9, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr. 9, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 14 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year mm	1932	1931
San Antonio.....	77	16.3	11	—	13.0	7	15.0	16.0
San Diego.....	40	12.8	2	43	13.3	4	16.4	15.6
San Francisco.....	163	12.9	9	62	14.4	9	13.8	14.5
Schenectady.....	25	13.5	2	58	14.1	6	11.6	12.3
Seattle.....	89	12.4	0	0	11.2	2	12.3	13.3
Somerville.....	26	12.8	0	0	8.4	0	10.6	11.2
South Bend.....	18	8.5	1	29	8.7	4	8.1	9.4
Spokane.....	23	10.3	1	27	10.8	2	12.8	13.1
Springfield, Mass.....	44	14.9	3	51	12.0	2	12.1	13.8
Syracuse.....	63	15.2	4	52	11.7	5	12.5	12.8
Tacoma.....	25	12.0	1	28	12.6	0	12.4	14.8
Tampa.....	33	16.0	2	57	12.9	1	12.8	14.8
White.....	23	14.1	0	0	12.0	0	12.3	13.5
Colored.....	10	22.9	2	317	16.4	1	14.4	19.6
Toledo.....	75	13.0	6	65	12.6	6	13.0	13.8
Trenton.....	58	24.4	5	99	18.5	8	18.0	19.5
Utica.....	49	24.9	2	57	18.9	0	16.7	16.9
Washington, D. C. <sup>4</sup> .....	172	18.2	14	79	18.8	22	17.6	18.6
White.....	123	18.0	9	74	15.1	9	16.0	16.0
Colored.....	49	18.7	5	89	28.6	13	21.8	25.4
Waterbury.....	20	10.3	3	99	11.4	1	10.5	11.3
Wilmington, Del. <sup>5</sup> .....	35	17.2	0	0	22.5	4	18.4	17.2
Worcester.....	49	12.9	5	70	15.9	7	13.6	15.2
Yonkers.....	49	18.0	4	103	9.4	5	8.6	10.4
Youngstown.....	35	10.4	1	16	10.6	4	11.2	11.8

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended April 16, 1932, and April 18, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 16, 1932, and Apr. 18, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931
<b>New England States:</b>								
Maine.....	2	4	22	5	208	9	0	0
New Hampshire.....	2				15	21	0	0
Vermont.....		1			39	1	0	0
Massachusetts.....	36	52	9	7	611	522	3	2
Rhode Island.....	3	6	3		161	40	0	0
Connecticut.....	8	7	17	5	156	671	1	2
<b>Middle Atlantic States:</b>								
New York.....	99	128	35	13	2,066	2,577	9	15
New Jersey.....	30	62	48	12	529	909	1	2
Pennsylvania.....	73	63			1,648	4,374	10	8
<b>East North Central States:</b>								
Ohio.....	64	39	193	43	2,818	673	9	1
Indiana.....	27	10	43	33	72	856	8	6
Illinois.....	80	138	69	13	967	1,596	11	20
Michigan.....	26	46	32	5	1,764	105	9	11
Wisconsin.....	10	17	113	49	1,672	790	1	1
<b>West North Central States:</b>								
Minnesota.....	8	5	5		38	71	2	1
Iowa.....	6	6			2	56	0	1
Missouri.....	28	30	15	22	47	620	1	8
North Dakota.....	2	1			60	77	0	0
South Dakota.....	1	11			14	119	1	0
Nebraska.....		6	13		1	5	1	2
Kansas.....	9	13	6	16	460	48	3	1
<b>South Atlantic States:</b>								
Delaware.....	1	1	1	1	1	265	0	0
Maryland.....	14	14	162	23	40	1,612	2	4
District of Columbia.....	5	18	2	4	2	287	0	5
Virginia.....							2	
West Virginia.....	11	13	278	40	314	98	3	0
North Carolina.....	12	30	88	17	710	940	1	3
South Carolina.....	8	7	1,871	702	127	188	0	2
Georgia.....	12	7	188	215	34	123	0	0
Florida.....	3	7	6	14	6	206	0	1
<b>East South Central States:</b>								
Kentucky.....	8		330		72	341	3	5
Tennessee.....	10	4	1,040	96	104	91	3	2
Alabama.....	12	23	157	346	45	367	2	19
Mississippi.....	8	3					3	6

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended Apr. 16, 1932, and Apr. 18, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931
West South Central States:								
Arkansas.....	5	6	71	207	2	32	0	2
Louisiana.....	31	14	13	33	103	3	0	1
Oklahoma.....	12	19	152	143	43	23	0	5
Texas.....	21	36	133	69	328	57	1	0
Mountain States:								
Montana.....	2	2	2		166	8	0	1
Idaho.....	1	1	3	2			0	0
Wyoming.....		1	2		6	4	0	0
Colorado.....	3	7			166	274	1	2
New Mexico.....	11	2	54	2	89	28	1	1
Arizona.....		1	18	43	3	36	0	1
Utah.....	5	1		14	1	5	0	2
Pacific States:								
Washington.....	9	10	3	48	341	55	1	1
Oregon.....	2	5	65	55	250	150	0	0
California.....	80	49	88	77	627	1,461	0	3
Total.....	797	920	5,340	2,374	16,908	20,734	94	147

Division and State	Polioomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931
New England States:								
Maine.....	0	1	41	5	0	0	0	0
New Hampshire.....	1	0	30	1	0	0	0	0
Vermont.....	0	0	9	2	4	0	0	0
Massachusetts.....	3	1	585	374	0	0	3	2
Rhode Island.....	0	0	64	57	0	0	0	0
Connecticut.....	0	0	93	41	0	0	3	0
Middle Atlantic States:								
New York.....	1	2	1,662	897	12	4	2	11
New Jersey.....	0	0	315	340	0	0	1	3
Pennsylvania.....	3	1	881	483	0	1	14	14
East North Central States:								
Ohio.....	1	1	490	380	17	83	7	3
Indiana.....	0	1	101	276	18	109	1	0
Illinois.....	3	1	399	553	9	58	17	7
Michigan.....	1	3	415	333	6	14	4	10
Wisconsin.....	0	1	82	216	1	20	1	1
West North Central States:								
Minnesota.....	0	0	123	92	0	3	0	1
Iowa.....	0	0	66	78	44	81	5	0
Missouri.....	0	0	85	283	4	56	1	2
North Dakota.....	1	0	23	25	9	12	2	5
South Dakota.....	0	1	3	23	1	14	2	0
Nebraska.....	0	0	24	28	3	21	0	1
Kansas.....	0	0	46	59	5	98	4	1
South Atlantic States:								
Delaware.....	0	0	17	34	0	0	0	0
Maryland.....	0	1	124	65	0	0	4	5
District of Columbia.....	0	0	21	27	0	0	0	0
Virginia.....								
West Virginia.....	0	1	24	50	0	4	2	4
North Carolina.....	1	0	45	50	4	6	5	1
South Carolina.....	0	1	8	8	0	4	7	7
Georgia.....	0	0	5	71	2	0	9	1
Florida.....	0	1	1	5	0	0	3	4

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 16, 1932, and Apr. 18, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931	Week ended Apr. 16, 1932	Week ended Apr. 18, 1931
<b>East South Central States:</b>								
Kentucky	0	0	12	87	16	2	4	2
Tennessee	0	0	32	19	10	8	7	11
Alabama	1	0	13	38	15	25	8	6
Mississippi	0	0	9	18	19	66	3	3
<b>West South Central States:</b>								
Arkansas	0	2	7	20	25	33	1	3
Louisiana	1	0	9	14	3	33	12	6
Oklahoma	0	0	6	31	16	152	2	1
Texas	1	0	27	41	29	37	5	6
<b>Mountain States:</b>								
Montana	0	0	20	36	1	3	3	1
Idaho	0	0	1	4	1	2	0	1
Wyoming	0	0	11	16	3	7	0	0
Colorado	0	0	35	40	0	2	0	0
New Mexico	0	1	10	7	0	4	3	3
Arizona	0	0	7	4	0	3	0	0
Utah	0	0	5	9	0	0	0	0
<b>Pacific States:</b>								
Washington	0	0	37	41	86	0	1	1
Oregon	0	0	12	19	28	20	4	1
California	3	4	168	155	22	53	7	9
	21	24	6,310	5,455	413	1,036	157	137

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Apr. 16, 1932, 8 cases: 1 case in South Carolina, 2 cases in Georgia, 4 cases in Alabama, and 1 case in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Men-ingo-coccus menin-gitis	Diph-theria	Infl-u-enza	Ma-laria	Mea-sles	Pe-l-legra	Polio-my-elitis	Scarlet fever	Small-pox	Ty-phoid fever
<b>February, 1932</b>										
Arkansas	1	48	274	19	13	8	0	93	93	12
New Hampshire		6						151		2
<b>March, 1932</b>										
Indiana	42	169	880		241		1	594	40	11
Maine	2	13	267		1,403		0	109	0	1
Massachusetts	9	176	91	1	2,418	2	3	2,335	0	9
New Jersey	6	152	864		1,219		4	1,459	0	11
North Dakota	5	8	509		201		0	74	12	
Pennsylvania	22	506			9,524		2	3,707	7	44
Vermont		5			495		0	65	22	1
Wyoming	6	3	2		18		0	34	5	6

February, 1933		Mumps—Continued.	
Arkansas:	Cases		Cases
Chicken pox.....	97	Vermont.....	331
Mumps.....	39	Wyoming.....	93
Trachoma.....	9	Ophthalmia neonatorum:	
Tularaemia.....	2	Massachusetts.....	65
Whooping cough.....	67	New Jersey.....	1
		Pennsylvania.....	13
March, 1933		Paratyphoid fever:	
Actinomycosis:		Maine.....	1
Pennsylvania.....	1	Puerperal fever:	
Anthrax:		Pennsylvania.....	23
New Jersey.....	1	Rabies in man:	
Chicken pox:		Pennsylvania.....	1
Indiana.....	357	Septic sore throat:	
Maine.....	110	Maine.....	1
Massachusetts.....	1,020	Massachusetts.....	31
New Jersey.....	1,255	Wyoming.....	1
North Dakota.....	38	Tetanus:	
Pennsylvania.....	3,916	New Jersey.....	1
Vermont.....	112	Pennsylvania.....	2
Wyoming.....	15	Trachoma.	
Conjunctivitis:		Indiana.....	3
Maine.....	1	Massachusetts.....	5
Wyoming.....	30	New Jersey.....	1
Dysentery:		Pennsylvania.....	2
Massachusetts.....	1	Trichinosis:	
German measles:		North Dakota.....	11
Maine.....	269	Pennsylvania.....	1
Massachusetts.....	77	Undulant fever:	
New Jersey.....	54	Indiana.....	1
Pennsylvania.....	222	Maine.....	1
Lead poisoning.		Massachusetts.....	2
Massachusetts.....	4	Pennsylvania.....	1
Lethargic encephalitis:		Vincent's angina:	
Indiana.....	1	Indiana.....	3
Massachusetts.....	2	Maine.....	2
New Jersey.....	4	North Dakota.....	11
Pennsylvania.....	6	Whooping cough:	
Mumps:		Indiana.....	462
Indiana.....	437	Maine.....	121
Maine.....	46	Massachusetts.....	1,062
Massachusetts.....	1,411	New Jersey.....	1,269
New Jersey.....	846	North Dakota.....	21
North Dakota.....	65	Pennsylvania.....	3,593
Pennsylvania.....	3,993	Vermont.....	150
		Wyoming.....	6

**Cases of Certain Communicable Diseases Reported for the Month of February, 1932, by State Health Officers**

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	164	18	2,338	77	108	0	35	5	143
New Hampshire.....		6			151			2	
Vermont.....	168		526	267	61	78	11	7	109
Massachusetts.....	919	226	1,566	1,108	2,070	5	403	13	853
Rhode Island.....	104	22	3,783	161	212	0	48	0	64
Connecticut.....	523	26	971	333	413	26	114	8	462
New York.....	2,763	597	7,553	1,503	5,600	11	1,616	43	2,733
New Jersey.....	1,409	185	576	448	1,032	0	359	8	1,700
Pennsylvania.....	4,240	570	7,509	3,363	3,006	0	655	75	2,967
Ohio.....	1,813	272	2,856	1,126	1,817	188	664	29	2,512
Indiana.....	542	237	408	377	541	76	196	14	471
Illinois.....	1,618	425	709	319	1,776	26	809	34	1,527
Michigan.....	1,412	193	1,803	1,378	1,989	11	541	30	1,167
Wisconsin.....	1,463	76	988	1,342	449	27	156	3	880
Minnesota.....	234	46	183		543	8	269	12	74
Iowa.....	190	50	24	75	223	141	28	4	97

### Cases of Certain Communicable Diseases Reported for the Month of February, 1932, by State Health Officers—Continued

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
Missouri.....	479	161	116	84	373	67	150	11	845
North Dakota.....	88	20	257	124	93	34	9	2	10
South Dakota.....	39	20	243	68	50	47	7	5	21
Nebraska.....	150	32	147	132	138	38	10	2	94
Kansas.....	571	81	520	440	245	10	203	7	275
Delaware.....	44	12	3	53	53	0	12	4	54
Maryland.....	643	130	111	552	511	0	167	20	839
District of Columbia.....	150	61	11	95	0	0	95	2	83
Virginia.....	543	228	310	300	0	0	124	49	1,671
West Virginia.....	184	85	1,738	96	189	3	78	24	312
North Carolina.....	612	113	1,139	207	16	16	21	1,536	21
South Carolina.....	175	123	204	277	31	1	88	28	142
Georgia.....	99	43	24	73	59	1	136	44	85
Florida.....	12	60	22	15	25	1	35	28	35
Kentucky <sup>1</sup> .....									
Tennessee.....	163	115	213	127	173	67	149	35	304
Alabama.....	150	114	8	101	69	11	319	40	93
Mississippi.....	628	71	24	179	43	119	116	32	700
Arkansas.....	97	48	13	39	93	93	11	12	67
Louisiana.....	23	117	140	5	73	22	106	67	40
Oklahoma <sup>2</sup> .....	54	101	72	48	125	42	92	14	96
Texas.....		242			266			27	
Montana.....	73	8	295	21	183	5	32	3	50
Idaho.....	32	9	6	39	38	9	9	16	9
Wyoming.....	27		8	58	27	0			
Colorado.....	355	36	202	251	139	6	31	2	87
New Mexico.....	100	100	261	30	52	9	64	13	92
Arizona.....	163	18	4	11	22	1	95		46
Utah <sup>3</sup> .....									
Nevada.....	5	1	2		12	0	12		2
Washington.....	359	15	2,425	97	161	76	113	3	141
Oregon.....	167	15	383	107	82	44	35	8	52
California.....	3,283	278	1,642	562	584	50	926	27	701

### Case Rates per 100,000 Population (Annual Basis) for the Month of February, 1932

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	258	28	3,679	121	170	0	55	8	225
New Hampshire.....		16			407	0		5	
Vermont.....	589		1,844	936	214	273	39	25	592
Massachusetts.....	270	66	460	343	607	1	118	4	250
Rhode Island.....	188	40	6,840	291	383	0	87	0	116
Connecticut.....	403	20	749	257	319	20	68	6	372
New York.....	271	59	741	147	549	1	158	4	267
New Jersey.....	428	56	175	136	323	0	109	2	516
Pennsylvania.....	549	74	972	435	397	0	85	10	516
Ohio.....	338	51	533	210	339	35	124	5	469
Indiana.....	209	91	157	145	208	29	75	5	181
Illinois.....	263	69	115	52	299	4	131	6	243
Michigan.....	357	49	456	348	490	3	137	8	295
Wisconsin.....	620	32	419	569	190	11	66	1	373
Minnesota.....	114	22	89		265	4	102	6	36
Iowa.....	100	25	12	38	114	72	14	2	49
Missouri.....	165	56	40	29	129	23	52	4	392
North Dakota.....	162	37	474	229	172	63	17	4	18
South Dakota.....	70	36	438	123	90	85	18	9	88
Nebraska.....	136	29	134	120	125	35	9	2	85
Kansas.....	380	54	347	203	163	7	135	5	183
Delaware.....	230	63	16	278	278	0	63	21	283
Maryland.....	491	99	85	421	390	0	1127	15	640
District of Columbia.....	363	156	28		243	0	243	5	212
Virginia.....	281	118	161		155	0	64	25	866
West Virginia.....	132	61	1,245	62	135	2	56	17	228
North Carolina.....	238	44	442		80	6		8	597

<sup>1</sup> Pulmonary.<sup>2</sup> Reports received weekly.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.



**Case Rates per 100,000 Population (Annual Basis) for the Month of February  
1932—Continued**

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
South Carolina.....	126	89	147	200	22	1	64	20	103
Georgia.....	43	19	10	32	26		59	19	37
Florida.....	10	49	18	12	21	1	29	23	29
Kentucky.....									
Tennessee.....	78	55	101	60	82	32	71	17	145
Alabama.....	71	54	4	47	42	5	150	19	44
Mississippi.....	389	44	15	111	27	74	72	20	434
Arkansas.....	66	32	9	26	63	63	7	8	45
Louisiana.....	14	69	83	3	43	13	62	39	24
Oklahoma.....	33	61	44	29	76	25	56	8	52
Texas.....		51			56			6	
Montana.....	171	19	698	49	430	12	75	7	117
Idaho.....	90	25	17	110	107	25	25	45	25
Wyoming.....	148		27	318	148	0			
Colorado.....	428	43	243	302	167	7	37	4	105
New Mexico.....	293	293	764	88	152	26	187	38	269
Arizona.....	459	51	11	31	62	3	268		130
Utah.....									
Nevada.....	68	14	27		163	0	27		27
Washington.....	285	12	1,925	77	128	60	90	2	112
Oregon.....	216	19	495	138	106	57	45	10	67
California.....	695	59	347	119	124	11	196	6	148

1 Pulmonary

2 Reports received weekly

3 Exclusive of Oklahoma City and Tulsa.

### RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of March, 1932, by departments of health of States named to other State health departments*

Disease	California	Connecticut	Illinois	Massachusetts	Minnesota	New York
Chicken pox.....		1				1
Diphtheria.....					1	
Dysentery.....						1
Measles.....						2
Meningitis.....					1	1
Pneumonia.....				1		
Septic sore throat.....				3		1
Scarlet fever.....		2		3		1
Tuberculosis.....	8		7		22	1

**GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES**

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended April 9, 1932, and April 11, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	799	898	
98 cities.....	333	419	733
Measles:			
46 States.....	13,701	20,884	
98 cities.....	5,598	8,516	
Meningococcus meningitis:			
46 States.....	65	168	
98 cities.....	34	85	
Polioomyelitis:			
46 States.....	20	20	
Scarlet fever:			
46 States.....	5,676	5,545	
98 cities.....	2,758	2,322	1,656
Smallpox:			
46 States.....	392	1,051	
98 cities.....	40	125	63
Typhoid fever:			
46 States.....	157	124	
98 cities.....	21	32	28
<i>Deaths reported</i>			
Influenza and pneumonia:			
91 cities.....	1,098	1,064	
Smallpox:			
91 cities.....	0	1	
New Orleans, La.....	0	1	

## City reports for week ended April 9, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland .....	2	0	0	1	0	40	1	2
New Hampshire:								
Concord .....	0	0	0		0	4	0	2
Manchester .....	0	0	0		0	0	0	2
Nashua .....	0	0	0	0	0	0	0	0
Vermont:								
Barre .....	0	0	0		0	0	0	0
Burlington .....	1	0	2		0	0	1	0
Massachusetts:								
Boston .....	69	27	20		0	64	74	42
Fall River .....	4	3	1	1	0	80	7	3
Springfield .....	28	2	1	1	0	31	14	1
Worcester .....	14	3	0		0	0	35	8
Rhode Island:								
Pawtucket .....	0	0	0		0	0	0	0
Providence .....	4	7	3		2	61	2	10
Connecticut:								
Bridgeport .....	1	4	0	1	0	5	0	1
Hartford .....	7	3	1		0	2	7	8
New Haven .....	13	1	0	1	0	4	23	2
MIDDLE ATLANTIC								
New York:								
Buffalo .....	39	9	2		2	13	1	34
New York .....	293	214	98	60	28	242	203	221
Rochester .....	7	5	1	2	0	148	15	7
Syracuse .....	9	3	0		0	459	6	6
New Jersey:								
Camden .....	10	6	1	3	0	1	0	8
Newark .....	49	14	5	4	2	39	143	11
Trenton .....	3	2	0	1	2	1	3	9
Pennsylvania:								
Philadelphia .....	139	58	6	24	12	14	76	96
Pittsburgh .....	45	14	5	4	4	349	43	28
Reading .....	32	1	1		1	1	1	5
Scranton .....	8		0		0	1	0	
EAST NORTH CENTRAL								
Ohio:								
Cincinnati .....	3	7	3	1	4	0	2	16
Cleveland .....	82	22	8	67	15	858	65	24
Columbus .....	2	2	2	1	1	6	5	3
Toledo .....	10	3	0	2	2	25	0	10
Indiana:								
Fort Wayne .....	1	2	4		1	1	0	0
Indianapolis .....	22	3	1		1	8	156	9
South Bend .....	4	0	0		0	4	0	0
Terra Haute .....	7	0	0		0	1	0	4
Illinois:								
Chicago .....	105	89	35	7	4	430	14	35
Springfield .....	5	1	1	1	0	0	0	0

## City reports for week ended April 9, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL Continued								
Michigan:								
Detroit.....	108	38	22	12	5	330	60	23
Flint.....	10	2	0	18	2	275	89	5
Grand Rapids ..	9	0	0		2	140	21	0
Wisconsin:								
Kenosha.....	0	0	0		0	2	0	0
Madison.....	10	0	0			0	0	
Milwaukee.....	179	11	1	1	1	393	28	6
Racine.....	30	1	0		0	207	48	1
Superior.....	4	0	0		1	0	30	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	4	0	0		1	1	0	1
Minneapolis.....	16	10	0		0	7	30	7
St. Paul.....	1	4	1	1	1	9	9	4
Iowa:								
Davenport.....	1	0	0			0	2	
Des Moines.....	0	1	3			0	0	
Sioux City.....	3	1	0			0	2	
Waterloo.....	7	0	0			1	0	
Missouri:								
Kansas City.....	25	3	3		0	1	3	20
St. Joseph.....	0	1	3		1	0	0	6
St. Louis.....	29	31	6	5	5	4	6	10
North Dakota:								
Fargo.....	2	0	0		0	37	0	0
Grand Forks ..	0	0	0			0	0	
South Dakota:								
Aberdeen.....	2	0	0			8	0	
Sioux Falls.....	0	0	0			1	0	
Nebraska:								
Omaha.....	8	2	1		0	0	3	13
Kansas:								
Topeka.....	22	1	0	2	0	2	10	1
Wichita.....	12	1	0		0	143	2	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	2	2	0		0	0	3	8
Maryland:								
Baltimore.....	130	19	4	22	6	2	110	33
Cumberland.....	0	0	0	2	0	8	0	1
Frederick.....	0	0	1	1	0	0	0	1
District of Columbia:								
Washington.....	58	11	4	3	3	9	0	17
Virginia:								
Lynchburg.....	18	0	1		4	2	2	4
Norfolk.....	12	0	0	1	0	0	0	9
Richmond.....	2	2	0		3	0	0	6
Roanoke.....	1	1	0		5	0	0	1
West Virginia:								
Charleston.....	1	0	0	2	1	75	0	0
Huntington.....	0		3		0	4	0	0
Wheeling.....	0	0	0		0	6	0	2
North Carolina:								
Raleigh.....	1	1	1		0	10	0	1
Wilmington.....	0	0	0		0	0	0	0
Winston-Salem.....	9	0	0		1	1	11	0
South Carolina:								
Charleston.....	2	0	0	121	1	0	0	9
Columbia.....	3	0	1		1	60	0	8
Greenville.....	1	0	0		0	2	0	0
Georgia:								
Atlanta.....	6	3	3	11	2	2	0	8
Brunswick.....	5	0	0		0	0	0	0
Savannah.....	12	1	1	18	2	0	0	0
Florida:								
Miami.....	7	2	1		0	0	0	1
Tampa.....	28	1	3	2	2	0	0	8

## City reports for week ended April 9, 1932—Continued

Division, State, and city	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington .....	0	0	0	-----	0	0	0	3
Tennessee:								
Memphis .....	7	2	1	-----	8	-----	0	14
Nashville .....	0	1	0	-----	3	1	0	7
Alabama:								
Birmingham .....	10	1	2	26	1	3	4	8
Mobile .....	0	0	2	-----	0	0	1	0
Montgomery .....	10	0	2	1	-----	0	9	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith .....	0	0	1	-----	-----	0	0	-----
Little Rock .....	1	0	0	-----	0	0	5	7
Louisiana:								
New Orleans .....	0	11	14	3	2	2	0	15
Shreveport .....	2	0	0	-----	0	8	7	7
Oklahoma:								
Oklahoma City .....	0	1	2	-----	2	12	8	5
Tulsa .....	5	1	0	-----	-----	7	0	-----
Texas:								
Dallas .....	8	5	3	2	2	-----	1	4
Fort Worth .....	18	1	0	-----	0	0	0	2
Galveston .....	0	0	1	-----	0	0	0	5
Houston .....	1	4	8	-----	4	5	0	15
San Antonio .....	1	3	1	-----	4	0	0	8
MOUNTAIN								
Montana:								
Billings .....	0	1	0	-----	0	0	0	0
Great Falls .....	7	0	0	-----	1	0	0	2
Helena .....	0	0	1	-----	0	13	0	0
Missoula .....	0	0	0	-----	0	0	0	0
Idaho:								
Boise .....	0	0	0	-----	0	0	1	0
Colorado:								
Denver .....	27	7	3	-----	3	108	33	11
Pueblo .....	25	0	0	-----	0	0	1	1
New Mexico:								
Albuquerque .....	2	0	0	-----	0	49	5	2
Utah:								
Salt Lake City .....	32	2	2	-----	0	1	1	0
Nevada:								
Reno .....	0	0	0	-----	0	0	0	1
PACIFIC								
Washington:								
Seattle .....	19	2	1	-----	-----	387	5	-----
Spokane .....	5	0	0	-----	-----	0	0	-----
Tacoma .....	0	1	2	-----	0	25	1	2
Oregon:								
Portland .....	13	7	2	2	2	189	12	4
Salem .....	10	0	0	2	0	1	8	0
California:								
Los Angeles .....	174	31	32	40	0	9	14	17
Sacramento .....	41	2	1	-----	0	51	2	6
San Francisco .....	86	11	1	2	0	217	7	6

## City reports for week ended April 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland	3	4	0	0	0	1	0	0	0	23	27
New Hampshire:											
Concord	0	3	0	0	0	0	0	0	0	0	10
Manchester	2	0	0	0	0	2	0	0	0	0	19
Nashua	1	0	0	0	0	0	0	0	0	0	
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	1	5
Burlington	0	0	0	0	0	0	0	0	0	0	9
Massachusetts:											
Boston	91	186	0	0	0	16	1	0	0	35	244
Fall River	5	11	0	0	0	2	0	0	0	5	35
Springfield	12	6	0	0	0	5	0	0	0	7	44
Worcester	10	42	0	0	0	5	0	0	0	17	49
Rhode Island:											
Pawtucket	3	0	0	0	0	0	0	0	0	0	18
Providence	14	38	0	0	0	6	0	0	0	3	79
Connecticut:											
Bridgeport	12	3	0	0	0	0	0	0	0	6	34
Hartford	6	12	0	0	0	4	0	0	0	14	53
New Haven	6	15	0	0	0	0	0	1	0	15	42
MIDDLE ATLANTIC											
New York:											
Buffalo	28	89	1	0	0	13	0	0	0	19	184
New York	330	826	0	0	0	85	9	1	1	213	1,607
Rochester	11	71	0	0	0	2	0	0	0	7	92
Syracuse	12	29	0	0	0	2	0	0	0	32	63
New Jersey:											
Camden	6	28	0	0	0	1	0	0	0	4	48
Newark	36	32	0	0	0	2	1	0	0	43	89
Trenton	3	5	0	0	0	3	0	0	0	2	58
Pennsylvania:											
Philadelphia	105	200	0	0	0	28	2	1	0	179	632
Pittsburgh	31	48	0	0	0	9	0	0	0	42	102
Reading	5	26	0	0	0	1	0	0	0	22	40
Scranton		23		0				0		1	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	25	44	1	0	0	13	0	0	0	8	147
Cleveland	40	95	0	0	0	15	0	0	0	160	242
Columbus	12	5	1	4	0	5	0	0	0	36	102
Toledo	15	4	0	0	0	2	0	0	0	95	75
Indiana:											
Fort Wayne	5	2	3	0	0	1	0	0	0	6	31
Indianapolis	13	10	8	0	0	5	0	0	0	43	
South Bend	4	2	0	0	0	3	0	0	0	7	18
Terre Haute	2	1	0	0	0	1	0	0	0	1	19
Illinois:											
Chicago	134	214	1	0	0	42	1	0	1	152	692
Springfield	4	3	0	2	0	1	0	1	0	8	28
Michigan:											
Detroit	119	187	1	0	0	21	1	1	0	197	270
Flint	14	6	2	0	0	0	0	0	0	30	32
Grand Rapids	12	7	0	0	0	1	1	0	0	3	24
Wisconsin:											
Kenosha	1	2	0	0	0	0	0	1	0	4	3
Madison	4	1	1	0				0		14	
Milwaukee	29	24	0	0	0	3	1	0	0	132	100
Racine	3	1	0	0	0	2	0	0	0	0	19
Superior	4	1	0	0	0	2	0	0	0	0	10

## City reports for week ended April 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	8	3	0	0	0	0	0	0	0	0	20
Minneapolis.....	36	51	0	0	0	2	0	0	0	32	99
St. Paul.....	30	15	0	0	0	2	0	0	0	9	65
Iowa:											
Davenport.....	2	4	2	0	—	—	0	0	—	0	—
Des Moines.....	9	9	3	0	—	—	0	0	—	0	88
Sioux City.....	2	5	1	4	—	—	0	0	—	3	—
Waterloo.....	2	0	1	0	—	—	1	0	—	3	—
Missouri:											
Kansas City.....	25	20	1	0	0	9	0	0	0	23	110
St. Joseph.....	4	1	0	0	0	1	0	0	0	0	14
St. Louis.....	57	16	3	0	0	13	1	0	0	46	272
North Dakota:											
Fargo.....	1	3	0	0	0	1	0	0	0	0	3
Grand Forks.....	1	0	0	0	—	—	—	0	—	0	—
South Dakota:											
Aberdeen.....	0	0	1	2	—	—	0	0	—	0	—
Sioux Falls.....	3	1	1	0	—	—	0	0	—	0	9
Nebraska:											
Omaha.....	4	5	4	1	0	1	0	0	0	2	53
Kansas:											
Topeka.....	4	0	1	0	0	0	0	0	0	35	8
Wichita.....	5	0	4	0	0	2	0	0	0	1	25
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	6	5	0	0	0	2	0	0	0	7	35
Maryland:											
Baltimore.....	40	87	0	0	0	17	2	4	0	152	226
Cumberland.....	0	1	0	0	0	0	0	0	0	0	10
Frederick.....	0	1	0	0	0	0	0	0	0	0	2
District of Col.:											
Washington.....	25	23	0	0	0	8	0	0	0	23	172
Virginia:											
Lynchburg.....	0	3	0	0	0	0	0	0	0	26	16
Norfolk.....	1	1	0	0	0	4	0	0	0	3	34
Richmond.....	4	6	0	0	0	2	0	0	0	2	55
Roanoke.....	1	6	1	0	0	0	0	0	0	1	19
West Virginia:											
Charleston.....	1	0	0	0	0	1	0	0	0	7	12
Huntington.....	—	8	—	0	0	0	—	0	0	0	—
Wheeling.....	2	2	0	0	0	0	0	1	1	18	9
North Carolina:											
Raleigh.....	0	0	1	0	0	1	0	0	0	1	3
Wilmington.....	0	0	0	0	0	0	0	0	0	11	0
Winston-Salem.....	1	23	0	0	0	0	0	0	0	35	18
South Carolina:											
Charleston.....	0	0	0	0	0	0	0	0	0	0	26
Columbia.....	0	0	0	4	0	10	0	0	1	3	70
Greenville.....	—	1	—	0	0	0	—	0	0	0	—
Georgia:											
Atlanta.....	6	5	2	0	0	5	0	0	0	8	98
Brunswick.....	0	0	0	0	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	0	2	0	2	1	2	33
Florida:											
Miami.....	0	1	0	0	0	6	1	0	0	2	29
Tampa.....	0	0	0	0	0	3	1	1	1	0	34
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	3	0	0	0	0	2	0	0	0	0	28
Tennessee:											
Memphis.....	12	10	2	4	0	5	0	0	0	27	86
Nashville.....	3	4	1	0	0	4	0	0	0	24	57
Alabama:											
Birmingham.....	3	0	0	0	0	3	0	2	0	19	59
Mobile.....	1	0	0	5	0	0	0	2	0	0	15
Montgomery.....	0	1	0	0	—	—	0	0	—	0	—

## City reports for week ended April 9, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes	
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported			
WEST SOUTH CENTRAL												
Arkansas:												
Fort Smith.....	1	0	0	0			0	0			1	
Little Rock.....	2	0	0	0	0	1	0	0	0	0	0	8
Louisiana:												
New Orleans.....	11	11	0	1	0	15	2	0	0	0	1	140
Shreveport.....	0	1	0	0	0	3	0	0	0	0	3	39
Oklahoma:												
Oklahoma City.....	4	5	3	1	0	2	0	0	0	0	0	39
Tulsa.....	3	0	1	5			0	0			1	
Texas:												
Dallas.....	5	0	1	0	0	4	0	0	0	0	12	64
Fort Worth.....	3	3	6	8	0	0	0	1	0	0	0	24
Galveston.....	0	0	0	0	0	1	0	0	0	0	0	14
Houston.....	3	3	2	0	0	2	1	0	0	0	0	68
San Antonio.....	2	1	0	2	0	9	0	0	0	0	0	77
MOUNTAIN												
Montana:												
Billings.....	1	0	0	0	0	0	0	0	0	0	0	7
Great Falls.....	2	0	0	0	0	0	0	0	0	0	0	13
Helena.....	0	0	0	0	0	0	0	0	0	0	0	9
Missoula.....	0	2	0	0	0	0	0	0	0	0	0	0
Idaho:												
Boise.....	0	0	0	1	0	0	0	0	0	0	0	6
Colorado:												
Denver.....	13	19	0	0	0	5	0	0	0	0	53	85
Pueblo.....	0	1	0	0	0	0	0	0	0	0	6	8
New Mexico:												
Albuquerque.....	1	4	0	0	0	3	0	0	0	0	0	15
Utah:												
Salt Lake City.....	2	7	1	0	0	0	0	0	0	0	4	24
Nevada:												
Reno.....	0	0	0	0	0	0	0	0	0	0	0	3
PACIFIC												
Washington:												
Seattle.....	8	10	2	0	0		0	0			5	
Spokane.....	6	1	8	0	0		0	0			0	
Tacoma.....	2	2	4	5	0	0	0	0	0	0	1	25
Oregon:												
Portland.....	4	1	9	5	0	0	0	0	0	0	16	62
Salem.....	1	1	1	0	0	0	0	0	0	0	3	
California:												
Los Angeles.....	37	68	4	5	0	17	1	0	0	0	31	239
Sacramento.....	3	2	0	0	0	0	1	1	0	0	5	29
San Francisco.....	22	3	1	2	0	6	1	2	0	0	14	163



## City reports for week ended April 9, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (Infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Fall River.....	1	1	0	0	0	0	0	0	0
Connecticut:									
Hartford.....	0	0	0	1	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	5	3	2	0	0	0	1	1	0
Pennsylvania:									
Philadelphia.....	5	1	1	2	0	0	0	1	0
Pittsburgh.....	3	2	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	2	1	0	0	0	0	0	0	0
Indiana:									
Fort Wayne.....	1	1	0	0	0	0	0	0	0
Indianapolis.....	4	5	0	0	0	0	0	0	0
Illinois:									
Chicago.....	0	1	1	1	0	0	0	0	0
Michigan:									
Detroit.....	2	0	1	1	0	0	0	0	0
Wisconsin:									
Milwaukee.....	1	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Missouri:									
St. Louis.....	1	0	1	1	0	0	0	0	0
Kansas:									
Wichita.....	1	1	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	0	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	2	0	0	0	0	0	0	1	0
North Carolina:									
Wilmington.....	0	0	0	0	1	0	0	0	0
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Columbia.....	0	1	0	0	0	3	0	0	0
Georgia:									
Atlanta.....	1	1	0	0	0	0	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	3	3	0	0	0
<b>EAST SOUTH CENTRAL<sup>1</sup></b>									
Kentucky:									
Covington.....	0	0	0	1	0	0	0	0	0
Tennessee:									
Memphis.....	1	1	0	0	0	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	0	0	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	0	0
Houston.....	1	0	0	0	0	0	0	0	0
San Antonio <sup>1</sup> .....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles <sup>2</sup> .....	1	1	0	0	0	0	0	0	0
San Francisco.....	1	1	0	0	0	0	0	0	0

<sup>1</sup> Typhus fever, 3 cases: 1 case in Savannah, Ga.; 1 case in Mobile, Ala.; and 1 case in San Antonio, Tex.<sup>2</sup> Dengue, 1 case in Los Angeles, Calif.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 9, 1932, compared with those for a like period ended April 11, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, March 6 to April 9, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Mar 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr 9, 1932	Apr. 11, 1931
98 cities.....	50	65	62	65	52	78	47	53	51	65
New England.....	53	79	65	67	65	70	38	46	62	84
Middle Atlantic.....	56	67	54	64	56	63	44	48	53	59
East North Central.....	54	72	48	72	31	82	29	64	46	86
West North Central.....	74	63	95	73	55	163	78	42	27	63
South Atlantic.....	59	53	49	73	60	61	37	47	37	49
East South Central.....	46	35	12	23	6	76	6	29	40	18
West South Central.....	135	68	162	71	112	64	158	85	92	54
Mountain.....	26	26	43	17	9	87	17	44	52	35
Pacific.....	44	55	89	51	70	69	57	53	70	57

## MEASLES CASE RATES

98 cities.....	171	947	732	1,041	727	1,208	846	1,122	860	1,327
New England.....	901	1,346	800	1,527	599	1,479	777	1,106	697	1,503
Middle Atlantic.....	644	1,026	578	1,158	598	1,321	621	1,250	560	1,422
East North Central.....	936	542	1,167	558	1,203	722	1,573	726	1,688	830
West North Central.....	165	55	316	4.2	186	651	898	532	388	704
South Atlantic.....	286	2,758	302	3,448	232	3,885	245	3,814	343	4,554
East South Central.....	58	1,157	23	1,004	19	1,650	6	1,515	23	1,768
West South Central.....	99	37	40	51	158	47	208	88	49	68
Mountain.....	509	1,462	388	1,288	603	1,140	664	661	1,008	844
Pacific.....	1,205	357	1,443	394	1,449	519	1,262	359	1,312	500

## SCARLET FEVER CASE RATES

98 cities.....	481	375	488	380	478	403	413	371	423	362
New England.....	709	589	724	676	731	697	683	577	774	474
Middle Atlantic.....	799	389	786	392	755	454	632	404	625	413
East North Central.....	382	399	394	395	397	378	345	377	360	337
West North Central.....	178	518	195	589	197	580	205	585	226	538
South Atlantic.....	327	311	371	342	382	311	345	291	318	358
East South Central.....	81	482	110	487	100	564	92	399	87	470
West South Central.....	79	95	89	102	49	78	46	95	53	105
Mountain.....	172	400	215	305	233	209	129	157	250	174
Pacific.....	135	96	147	110	133	104	122	92	145	104

See footnotes at end of table.

Summary of weekly reports from cities, March 6 to April 9, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Mar. 12, 1932	Mar. 14, 1931	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931
98 cities.....	5	19	5	22	14	17	4	14	6	19
New England.....	0	0	0	0	0	0	2	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	1
East North Central.....	6	9	4	8	2	7	4	9	4	6
West North Central.....	11	132	17	130	17	99	2	78	9	96
South Atlantic.....	0	0	0	0	10	4	0	2	8	18
East South Central.....	46	0	12	12	138	12	35	12	52	0
West South Central.....	0	61	13	95	0	78	3	71	10	81
Mountain.....	17	17	17	9	0	44	26	0	9	17
Pacific.....	13	41	11	43	15	22	13	16	23	53

## TYPHOID FEVER CASE RATES

98 cities.....	5	8	4	4	15	4	5	4	3	5
New England.....	0	0	2	2	5	2	0	2	2	2
Middle Atlantic.....	8	2	1	2	8	2	3	8	1	5
East North Central.....	1	2	2	2	3	2	4	2	2	8
West North Central.....	2	0	2	8	4	2	2	4	0	0
South Atlantic.....	25	6	2	16	12	12	8	14	16	16
East South Central.....	6	19	29	0	10	0	6	0	23	6
West South Central.....	10	14	23	10	20	7	18	10	0	8
Mountain.....	9	0	17	0	9	0	0	9	0	0
Pacific.....	8	4	2	8	6	10	17	2	6	8

## INFLUENZA DEATH RATES

91 cities.....	37	34	37	32	136	29	29	23	25	18
New England.....	19	26	10	19	17	14	17	2	5	19
Middle Atlantic.....	47	23	39	23	36	20	34	17	23	12
East North Central.....	30	28	40	28	41	25	24	18	22	14
West North Central.....	15	60	32	47	23	35	17	12	23	15
South Atlantic.....	39	57	49	49	136	32	39	40	61	30
East South Central.....	25	102	50	115	44	127	56	127	75	70
West South Central.....	37	55	61	35	64	55	40	69	40	45
Mountain.....	26	35	43	35	43	61	69	26	34	17
Pacific.....	7	36	12	34	5	41	2	14	0	19

## PNEUMONIA DEATH RATES

91 cities.....	193	191	183	184	193	180	167	171	151	155
New England.....	194	147	156	183	225	156	165	127	192	173
Middle Atlantic.....	250	214	238	216	243	220	203	223	186	163
East North Central.....	131	159	133	132	119	125	113	120	79	118
West North Central.....	215	159	192	215	239	178	204	150	189	253
South Atlantic.....	224	332	233	269	272	263	235	222	204	200
East South Central.....	182	242	201	210	201	191	194	172	201	178
West South Central.....	148	211	205	180	199	211	172	238	205	169
Mountain.....	207	235	233	122	138	131	121	157	129	191
Pacific.....	118	125	93	101	72	98	88	53	72	60

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Columbia, S. C., and Montgomery, Ala., not included.

<sup>3</sup> Columbia, S. C., not included.

<sup>4</sup> Montgomery, Ala., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended April 2, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended April 2, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....	.....	.....	.....	.....	.....
Nova Scotia.....	.....	54	.....	.....	.....
New Brunswick.....	.....	.....	.....	.....	4
Quebec.....	.....	4	1	.....	6
Ontario.....	2	375	.....	3	1
Manitoba <sup>1</sup> .....	.....	.....	.....	.....	.....
Saskatchewan.....	.....	.....	.....	1	.....
Alberta <sup>1</sup> .....	.....	.....	.....	.....	.....
British Columbia.....	.....	.....	1	1	2
Total .....	2	433	2	5	13

<sup>1</sup> No case of any disease included in the table was reported during the week

*Quebec Province—Communicable diseases—Week ended April 2, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended April 2, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	74	Poliomyelitis.....	1
Diphtheria.....	26	Scarlet fever.....	84
Erysipelas.....	9	Tuberculosis, pulmonary.....	48
German measles.....	16	Tuberculosis, other forms.....	1
Influenza.....	4	Typhoid fever.....	6
Measles.....	268	Whooping cough.....	31

*Yukon Territory—Influenza.*—According to information dated April 12, 1932, newspaper dispatches reported a mild form of influenza at Dawson, Yukon Territory. Public schools were said to have been closed because of the prevalence of the disease, which was thought to have originated among the Indians.

## CZECHOSLOVAKIA

*Communicable diseases—February, 1932.*—During the month of February, 1932, certain communicable diseases were reported in Czechoslovakia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	6	1	Paratyphoid fever.....	9	—
Cerebrospinal meningitis.....	7	—	Puerperal fever.....	60	36
Diphtheria.....	2, 179	131	Scarlet fever.....	1, 440	22
Dysentery.....	7	—	Trachoma.....	123	—
Malaria.....	1	—	Typhoid fever.....	288	42

## MEXICO

*Tampico — Communicable diseases — March, 1932.*— During the month of March, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	4	—	Malaria.....	487	17
Enteritis, various.....	53	56	Tuberculosis.....	39	37
Influenza.....	133	4	Whooping cough.....	18	1

## PORTO RICO

*San Juan—Communicable diseases—Four weeks ended March 26, 1932.*—During the four weeks ended March 26, 1932, cases of certain communicable diseases were reported in San Juan, Porto Rico, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	4	Measles.....	52
Diphtheria.....	6	Mumps.....	3
Filariasis.....	2	Ophthalmia neonatorum.....	1
Influenza.....	1	Tetanus, infantile.....	1
Malaria.....	40		

## VIRGIN ISLANDS

*Notifiable diseases—March, 1932.*—During the month of March, 1932, cases of certain diseases were reported in the Virgin Islands as follows:

St. Thomas and St. John:	Cases	St. Croix—Continued:	Cases
Gonorrhea.....	1	Leprosy.....	2
Syphilis.....	3	Syphilis.....	3
St. Croix:		Tetanus.....	1
Chancroid.....	1	Tuberculosis.....	4
Chicken pox.....	3	Uninfarctosis.....	2
Filariasis.....	1	Whooping cough.....	5

## YUGOSLAVIA

*Communicable diseases—December, 1931.*—During the month of December, 1931, certain communicable diseases were reported in Yugoslavia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	34	7	Paratyphoid fever.....	4	1
Cerebrospinal meningitis.....	5	2	Scarlet fever.....	648	77
Diphtheria and croup.....	1,083	193	Sepsis.....	8	6
Dysentery.....	26	6	Tetanus.....	11	3
Erysipelas.....	217	18	Typhoid fever.....	295	52
Leprosy.....	1	—	Typhus fever.....	14	1
Measles.....	723	16			



















## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec. 13- Jan. 9, 1932	Week ended—											
					January, 1932			February, 1932			March, 1932			April, 1932		
					16	23	30	6	13	20	27	5	12	19	26	3
India—Continued.																
Nagapatnam.....	C	2	1	1							1				1	
Rangoon.....	D	1	1													
Tatooine.....	C	3	3	9	38	15	58	39	141		104	173	172	128	163	143
Tututorin.....	D	2	1	7	10	7	8	15	10	16	46	29	34	61	37	31
Viagapatam.....	D	4	5	8	6		19	9	9	5	15	7	9	4		
.....	D	1	1			2			2	1	1	5	4	4		1
.....	C	6			2							1			2	
India (French):																
Karikal.....	D	1														
Pondicherry Territory	C	8	4	7	4		1				1	3	3			
.....	D	4	3	7	2		1				1	3				
Indo-China (see also table below):																
Phnompenh.....	C	23	38	26	22	4	11	4	13	8	4	4	4	11	10	7
Saigon and Cholon.....	D	21	36	25	22	4	6	4	13	8	4	4	4	7	10	6
Iraq:																
Baghdad.....	C	6	7	26	32	23	28	43	23	2	46	33	28	54	45	1
.....	D	3	5	12	24	18	22	35	17	24	23	23	15	48	35	42
Basra.....	C			11	15	5	2	2	1	2	1	1		1	1	6
.....	D			5	8	9	2	2	2	2	1	1		1		4
.....	C			1	1	1	1		1	1					4	7
Mosul Liwa.....	D	5		2												
Ivory Coast (see table below)	D															
Jamaica.....	C			1												
Japan:																
Kobe.....	C															
Taiwan.....	D											1	1		1	
Yokohama.....	C															
Mexico (see also table below):																
Chihuahua.....	D			1	1	2										
Jalisco (State)—Guadalajara.....	D	4	2	1	1	2			1		1	1	1	1		1
Mexico City and surrounding territory.....	D	7	5	10	8		3	6	5	7	9	11	6			
.....	D	4	1	1						1						





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Febru-ary, 1932	Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Febru-ary, 1932	March, 1932
Chosen.....	C	9	7	2	1	1	Mexico (see also table above) Morocco Turkey (see also table above) D C C D	565	427	152	279	438	305	
France.....	D	1	1					59	91		31	22	1	
Guatemala.....	C	4		6	1	5								
	C													
Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	December, 1931			January, 1932			February, 1932			March, 1932	
				1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-29	1-10	11-30
Indo-China (see also table above).....	C	39	47	144	41	324								
Ivory Coast.....	D	13	16	17	21	55	11	107	191	145	205	209	230	275
Syria: Beirut.....	C		1				52	85	85	47	98	86	109	113
	D													
	C						2	3						



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

(C indicates cases; D, deaths; P, present)

Place	Sept. 18- Oct. 17, 1931	Oct. 18- Nov. 12, 1931	Nov. 13- Dec. 12, 1931	Week ended--												Apr. 1932		
				December, 1931			January, 1932			February, 1932			March, 1932					
				19	26	2	9	16	23	30	6	13	20	27	5		12	19
Mexico:																		
Guadalajara					1													
Mexico City, including municipalities in Federal District	14	16	22	4	3	3	1	5	10	4	6	7	8	3	2			
San Luis Potosi	8	4	4	2	1	1	2	1	4	2	2	1	4	3	4			
Torreón	2	3			1										1			
Morocco	4	1	17	4	1	1	3		2	1	3	7	10	19	14	3	21	5
Palestine			2	1	2										6	2	4	
Paraguay: Asunción	6	3	1	2	1		1	1	1		1		1					
Peru:																		
Poland																		
Portugal: Oporto	14	20	106	68	30	46	49	69	61	74	61	49	41	58	67	74	65	52
Rumania	1	3	10	5	5	3	1	4		4	2	2	3	7	9	5	5	4
Rumania	18	38	68	25	41		42	62	83	68	51	79	1					
Tunisia: Tunis	3	9	6	4	5		1	3	1	8	1	1	7	11		14	26	10
Tunisia: Tunis	3	3	2		1		1					13	1	2		2	3	3
Turkey (see table below).																		
Union of South Africa:																		
Cape Province	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Municipality of East London																		
Natal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Orange Free State	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Transvaal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Venezuela: Caracas (see table below).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Yugoslavia (see table below).																		
On vessel: At Antofagasta, from Iquique and points north					1													

! Typhus fever was reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease did not spread to the coastal regions.









**UNITED STATES TREASURY DEPARTMENT**

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## **===== SPECIAL ARTICLE =====**

**Use of the White Rabbit in Testing Scarlet Fever  
Streptococcus Antitoxin**



**UNITED STATES  
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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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# PUBLIC HEALTH REPORTS

VOL. 47

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## THE STANDARDIZATION OF SCARLET FEVER STREPTOCOCCUS ANTITOXIN

### A Method Employing the Ear of the White Rabbit

By M. V. VELDER, *Surgeon, United States Public Health Service*

This study was undertaken for the purpose of developing a practical test for the potency determination of scarlet fever streptococcus antitoxin which could be carried out by the use of laboratory animals instead of using human subjects for test purposes, as is being done at the present time. The method which is presented has given, in the writer's hands, more definite results and with fewer test subjects than is the case with the human-test method. The test is dependent upon the fact that white rabbits give a sharply outlined area of subcutaneous inflammation when injected intradermally on the ventral surface of the ear with one human skin test dose of purified and concentrated scarlet fever streptococcus toxin, and further, that this reaction may be prevented by the addition of a sufficient amount of antiserum.

*Method of toxin purification and concentration.*—Because of the fact that a fairly high percentage of white rabbits, such as were used in the present study, are susceptible both to the toxin contained in the hemolytic streptococcus broth filtrate and to the other dissolved bacterial substances contained therein, it is necessary to remove the latter from the filtrate before the true toxin reaction can be observed in these animals. Ando, Kurauchi, and Nishimura (1) have developed a method of purifying and concentrating the filtrate from broth cultures of the scarlet fever streptococcus so as to eliminate those bacterial substances, commonly designated as nucleoproteins. More recently, Wadsworth and Quigley (2) report a method for purifying and concentrating the toxin by which there is a marked reduction in the total nitrogen. They make no mention, however, as to the presence of nucleoprotein substances in the final product.

The writer has developed from these two methods a modification which eliminates the use of absolute alcohol, as in the Ando method, and the need for dialysis as required by the Wadsworth-Quigley technique. The procedure is as follows:

Cool one volume of toxin and two volumes of acetone to 0 to 5° C. and then add the toxin to the acetone. Shake the mixture thoroughly for several minutes.

A heavy precipitate forms immediately. Allow to settle for one-half to 1 hour and then collect the precipitate by suction filtration. When all trace of the acetone has disappeared from the precipitate, redissolve it in distilled water, using a volume equal to one-tenth the original volume of the toxin. To this solution add sufficient sodium chloride to make a 1 per cent solution. This solution is now cooled as above and then brought to a pH of 4.0 by the addition of 50 per cent acetic acid. Shake thoroughly and allow to stand in the cold for 1 to 4 hours. A heavy and somewhat colloidal precipitate forms, which is removed and discarded. The writer has accomplished this removal by centrifuging in the usual centrifuge, though a small Sharples probably would be more satisfactory. The supernatant liquid is collected, filtered clear if necessary, brought to a pH of 7.0 to 7.4 with sodium hydroxide, cooled to 0 to 5° C., and then added to twice its volume of cooled acetone. The mixture is shaken thoroughly and the precipitate collected as above described.

If a highly purified toxin is desired, the above-mentioned steps should be repeated until no further precipitate is obtained by the addition of acetic acid.

When the precipitation processes are completed, the final acetone precipitate is dissolved in equal parts of normal saline and of the original broth. The volume is brought to one-tenth that of the original toxin, a preservative is added (merthiolate 1:10,000 is very satisfactory), the reaction is adjusted to pH 7.4 to 7.5, and, as a final step, the purified and concentrated toxin is passed through a suitable candle filter.

The writer has prepared a purified and concentrated standard stock toxin by passing 40 liters of raw toxin through 4 acetic acid and 5 acetone precipitations. The total nitrogen content of this purified and concentrated toxin, calculated as milligrams per 100 c. c. on the basis of the original volume, is as follows:

	Total nitrogen expressed as milligrams per 100 c. c.			
	Reported by Ando	Reported by Wadsworth	Reported by Veldee	
			Precipitated once	Precipitated 4 times
Original toxin filtrate.....	185	370	294	351
Purified and concentrated toxin.....	11	47	31	11

This stock toxin has been standardized on human subjects against a well-standardized raw toxin. As a means of conserving the supply and in order to simplify the making of dilutions, this concentrated stock toxin has been diluted in broth so as to contain 15,000 human skin test doses per cubic centimeter. Such a diluted toxin has now been kept at 10° C. for 10 months without any indication of deterioration.

Having determined the apparent suitability of the rabbit method (to be described later) for the testing of toxins and antitoxins by the use of this purified and concentrated scarlet fever streptococcus toxin and the National Institute of Health standard scarlet fever strepto-

coccus antitoxin, it seemed advisable to extend the testing to include other scarlet fever streptococcus toxins and antitoxins. For this purpose eight additional cultures were obtained, either from the scarlet fever committee or from the various commercial biologic laboratories. Individual toxin-broth filtrates from each of these cultures were precipitated twice with acetone and once with acetic acid. The approximate titers of these toxins are shown in Table 1. Toxin NY-2 was discarded at once because of its low titer, and later it was found advisable to do the same with toxin D-I, because the low titer did not permit sufficient dilution to eliminate pseudo-reactions in many rabbits. The remaining six toxins were of a sufficiently high titer to be suitable for the rabbit tests, even though they were not as highly purified as the standard toxin.

Douglas tryptic digest broth has been used throughout for the production of toxin. The method for preparing this medium will be found described by Watson and Wallace (3) and Cole and Onslow (4). The method as described was modified to the extent of adding only 45 c. c. instead of 90 c. c. of concentrated hydrochloric acid to 7 kilograms of meat; the final reaction was adjusted to pH 7.6, and the final volume was increased so as to make a three-quarter strength broth.

Inoculation of the broth was made from an 18-hour broth culture of the desired organism and growth was continued for 72 hours at 37° C.

*Details of the rabbit method.*—The rabbit appears to be the only small laboratory animal which shows a significant susceptibility to the toxin of the scarlatinal hemolytic streptococcus. Hartley (5), Pulvertaft (6), and others have reported that rabbits may be killed by the intravenous injection of scarlet fever streptococcus toxin. However, the size of the dose required to kill varies widely. The writer has obtained similar results. Of 96 rabbits injected intravenously with doses of raw toxin varying from 0.5 c. c. to 3 c. c. (25,000 to 150,000 skin test doses), 56 died within an average of 16 hours (6 to 48 hours) and 9 others died within an average of 123 hours (84 to 246 hours). Recovery was not always restricted to those receiving the smaller doses. Similarly, 8 rabbits were injected intravenously with the standard purified and concentrated toxin which has been used in the present study. Two rabbits each were injected with 0.25 c. c., 0.5 c. c., 0.75 c. c., and 1 c. c., respectively, and all died except one of those receiving 0.5 c. c. and one receiving 0.75 c. c.

Fraser and Plummer (7) have reported intradermal reactions when toxin injections are made on the closely clipped back or sides of chinchilla rabbits. Constant and uniform results, however, were not obtained by them.

The writer began the present work by injecting the rabbit in various places, hoping thereby to find some tissue or organ which

would show definite and constant susceptibility. Intradermal injections on the side or back after shaving or clipping according to the Fraser and Plummer method gave rather indefinite results with most rabbits. Injections into the mammary gland usually produced vascular engorgement, often actual hemorrhages into the tissues, and in some nonpregnant rabbits the lacteals became engorged with milk. However, a rather large dose of toxin was required and the point of change from normal to beginning reaction was difficult to determine. Intrasceral injections failed to produce results. Intradermal injections on the ventral surface of the pinna of the ear gave no reaction which could be observed by reflected light; but if the pinna was held up so as to be viewed by transmitted light it was observed that very definite reactions generally occurred, even with one human skin test dose of toxin. This observation forms the basis for the present report.

It was soon observed that, while most rabbits gave this subcutaneous auricular reaction to the raw toxin, in many rabbits the reaction could not be prevented by the addition of antitoxin to the toxin before injecting. Similarly, such rabbits continued to give a positive reaction with toxin that had been heated in boiling water for two hours. However, it was found that when a purified and concentrated toxin was used these false reactions did not occur.

A white skinned rabbit is very desirable for this work, since it simplifies the readings. The writer has used exclusively such white rabbits as are obtained by the National Institute of Health on competitive bid in the open market, the only specifications being that they shall be all white, healthy rabbits and not less than 4 pounds in weight. This weight requirement obviates the necessity of specifying a minimum age; young rabbits do not respond to toxin as well as those fully matured. This observation confirms the findings of Parish and Okell (8) and Trask (9). Records have been kept on 321 rabbits, and of these 236 or 74 per cent gave definite reactions to one human skin test dose, the remainder giving either indefinite reactions or none at all. This susceptibility is possibly an inherited characteristic, and if so, it should be possible by selective breeding to establish a strain in which all will be reactors.

The actual steps in making the toxin-antitoxin neutralization tests on the rabbit's ear are as follows:

A sufficient supply of reacting animals is obtained by injecting a considerable number of fresh rabbits with one human skin test dose of purified and concentrated toxin contained in a 0.1 c. c. volume, a day or more in advance of putting on the neutralization test. Several days in advance is preferable, so that the reaction produced, especially in the more susceptible animals, will have subsided somewhat before using for the neutralization tests. The preliminary toxin-injection is made intradermally on the inside of the right pinna in the mid line and near the base. This leaves the remainder of the right ear flap and all of

the left fresh for the toxin-antitoxin tests. Readings are made in 18 to 24 hours, and only those rabbits are reserved for test purposes which show a reaction area of 10 by 10 mm. or more in dimension and which show an intensity of + when measured on a scale of 0,  $\pm$ , +, and ++.

A preliminary series of tests showed that fresh rabbits are not serum sensitive and that the reaction produced by the toxin could be completely neutralized with sufficient antitoxin, indicating that protein reactions were not being obtained as with the raw unpurified toxin.

The toxin-antitoxin mixtures are made in the usual way, using 25 human skin test doses of purified and concentrated toxin as the unit of toxin in each instance instead of 5 STD as are used for the human test dose. The mixtures are placed at 37° C. for one hour. The injections of 0.1 c. c. each are made on the inner side of the pinna between the main blood vessel and the margin of the ear. The size of the ear flap permits three injections equally spaced on the right and the same number in corresponding positions on the left, with an additional injection on the left in a position corresponding to the site of the test toxin injection on the right. The usual Schick syringe and needles may be used, though the writer prefers a 26-gage, one-half inch, flexible shaft and long beveled needle in preference to the usually used short, blunt Schick needle. The ear flap is supported on the fingers of the left hand so as to expose the ventral surface. When the needle has been inserted into the skin directly over the left index finger, the left thumb is pressed down on the ear at the junction of the needle shaft and the skin of the ear. This will hold the needle securely in place between thumb and index finger in case the rabbit struggles, and it will also prevent leakage along the needle shaft. The needle is withdrawn while the thumb is still in place. The skin on the inside of the ear possesses very little elasticity, and for this reason leakage is likely to occur when the needle is withdrawn. This leakage may be avoided by rubbing a small amount of collodion into the needle hole.

Readings are made at 24 and 48 hours, though it is advisable to make an observation at 15 to 18 hours as well. This gives a better impression of the development of the reaction. It will be observed that when the ear is viewed by reflected light nothing abnormal is seen unless the reaction is of pronounced intensity. The readings must, therefore, be made by light transmitted through the pinna. This should be good daylight, or its equivalent, direct sunlight or the usual electric light being unsatisfactory. Readings are made with the rabbit sitting quietly and without unnecessary manipulation of the ear. Gentle massage will increase the intensity of the reaction, but will not render a negative reaction positive. However, it is believed that reading the undisturbed ear is preferable.

Two dimensions of the inflamed area are recorded and also the intensity. The intensity is recorded as  $\pm$ , +, or ++. In the present work, reactions of less than 10 by 10 mm. in area were considered as negative. With further experience, however, it may be advisable to regard any reaction other than the trauma caused by the needle insertion as a positive reaction.

#### EXPERIMENTAL WORK ON RABBITS

Neutralization tests have been made with single strain toxins prepared from seven well-known strains of hemolytic streptococci which



were originally isolated from scarlet-fever sources and also with certain combinations of these toxins, using in each composite toxin equal portions by titer of the respective toxins. The reactions of these toxins on one susceptible human test subject as compared with the reactions produced by 1 STD of a well standardized raw toxin are shown in Table 1, and also the mean reactions produced by these purified and concentrated toxins in the rabbits when injected at the potency indicated. It will be seen that these various toxins induce reactions both in the human being and the rabbits which correspond reasonably well in both size and intensity.

TABLE 1.—*The "strains" of scarlet fever hemolytic streptococci used in the present study and the potency of their toxins after purification and concentration according to the method described*

Strain of hemolytic streptococcus	Estimated potency per c. c.	Reaction produced by 1 STD on the same susceptible individual	Reaction produced by one human skin test dose of toxin when injected intradermally on the ventral surface of the ear of white rabbits <sup>1</sup>
NY-5.....	196,000	15 by 16 FP <sup>2</sup> .....	See all protocols; mean of 60 rabbits, 16 by 23 mm.
D-IV.....	150,000	11 by 14 FP.....	13 by 19 mm. against NY-5 control of 16 by 24 mm.; see protocol 2.
D-II.....	100,000	14 by 14 FP.....	15 by 23 mm. against NY-5 control of 18 by 27 mm.; see protocol 3.
HL-391.....	100,000	13 by 21 FP.....	13 by 23 mm. against NY-5 control of 18 by 27 mm.; see protocol 4.
NY-55.....	75,000	18 by 19 FP.....	13 by 21 mm. against NY-5 control of 15 by 20 mm.; see protocol 5.
C-203.....	75,000	20 by 20 FP.....	14 by 20 mm. against NY-5 control of 16 by 23 mm.; see protocol 6.
D-III.....	25,000	18 by 20 FP.....	13 by 18 mm. against NY-5 control of 16 by 20 mm.; see protocol 7.
D-I.....	15,000	10 by 11 FP.....	Toxin not used because of low titer.
1 STD of standard toxin.....		15 by 17 VFP.....	

<sup>1</sup> The rabbits used for these comparative tests were selected on the basis of their reaction to a well standardized, concentrated and purified NY-5 toxin; only those being included which gave a reaction of at least 10 mm. in one of two dimensions and a reaction intensity of at least + (intensity scale 0, ±, +, ++).

<sup>2</sup> This toxin had been precipitated 5 times with acetone and 4 times with acetic acid as compared with the remaining toxins which were precipitated only twice with acetone and once with acetic acid. Therefore the NY-5 toxin is more highly purified, but at the same time the potency has been reduced more through loss than is the case with the other toxins.

<sup>3</sup> Mean reaction on 38 susceptible individuals was 19 by 26 mm., as compared with a reaction of 15 by 21 mm. by a well standardized toxin on the same individuals.

<sup>4</sup> One of 10 rabbits gave no reaction to 1 STD of C-203.

<sup>5</sup> Three of 10 rabbits gave no reaction to 1 STD of D-III.

The antitoxins used, in addition to the National Institute of Health standard antitoxin, were antitoxins prepared by different biologic laboratories. Antitoxins A and B of this study represent sera from the same manufacturers as were used in the therapeutic study of Veldee, Stevenson, and Mitchell (10).

Five susceptible rabbits were used for each protocol. This seemed to be a very suitable number, since with the proper dilution range it gave satisfactory readings on 3 to 5 separate animals. It is not practical to reproduce each of the 29 protocols covering the toxin-antitoxin neutralization tests which are summarized in Table 2. Sample protocols, however, are given so that the reader may study the individual rabbit reactions. It should be remembered that a reaction measuring 10 mm. or more in at least one dimension was considered positive.

**TABLE 2.**—Summary of the data contained in protocols 1 to 14, inclusive, showing the neutralizing value of different scarlet fever streptococcus antitoxins for the concentrated and purified toxins prepared from various "strains" of hemolytic streptococci, neutralization being measured by the reactions resulting from the intradermal injection of various mixtures of toxin-antitoxin into the skin on the ventral surface of the ears of white rabbits

*A. National Institute of Health standard antitoxin unconcentrated, containing in the original serum 800 units (85,000 NSTD) per c. c., but for the purpose of this study diluted to contain 80 units (4,000 NSTD) per c. c. Prepared with toxin from strain NY-5*

Data from protocol number	Strain of toxin used	Amount of antitoxin required to effect the neutralization of 25 skin test doses of the toxin indicated
1A.....	NY-5.....	Between 0.000833 c. c. and 0.001208 c. c. (0.066-0.096 unit, or 3.2-4.8 NSTD).
2A.....	D-IV.....	Between 0.000875 c. c. and 0.00125 c. c. (0.07-0.1 unit, or 3.5-5.0 NSTD).
3A.....	D-II.....	Between 0.0009 c. c. and 0.0013 c. c. (0.072-0.104 unit, or 3.6-5.2 NSTD).
4A.....	HL-391.....	Between 0.0009 c. c. and 0.0013 c. c. (0.072-0.104 unit, or 3.6-5.2 NSTD).
5A.....	NY-55.....	Between 0.000625 c. c. and 0.000825 c. c. (0.05-0.07 unit, or 2.5-3.5 NSTD).
6A.....	C-203.....	Between 0.000875 c. c. and 0.00125 c. c. (0.07-0.1 unit, or 3.5-5.0 NSTD).
7A.....	D-III.....	Between 0.000706 c. c. and 0.00085 c. c. (0.056-0.068 unit, or 2.8-3.4 NSTD).
8A.....	Composite of above seven toxins	Between 0.000875 c. c. and 0.000969 c. c. (0.054-0.078 unit, or 2.7-3.9 NSTD).
9A.....	Composite of D-II, D-III, and D-IV.	Between 0.000725 c. c. and 0.001025 c. c. (0.058-0.082 unit, or 2.9-4.1 NSTD).

*B. Commercial antitoxin A concentrated, containing approximately 360 units (18,000 NSTD) per c. c. prepared with the combined toxins of strains D-I, D-II, D-III and D-IV*

1B.....	NY-5.....	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
2B.....	D-IV.....	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
3B.....	D-II.....	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
4B.....	HL-391.....	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
5B.....	NY-55.....	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
6B.....	C-203.....	Between 0.00102 c. c. and 0.00139 c. c. (0.36-0.5 unit, or 18-25 NSTD).
7B.....	D-III.....	With less than 0.000635 c. c. (0.3 unit, or 15 NSTD).
8B.....	Composite of above seven toxins	Failed to show neutralization with 0.00362 c. c. (1.3 units, or 65 NSTD).
9B.....	Composite of D-II, D-III and D-IV.	Between 0.001832 c. c. and 0.00238 c. c. (0.66-0.86 unit, or 33-43 NSTD).

*C. Antitoxin B unconcentrated, containing approximately 800 units (40,000 NSTD) per c. c. and prepared with toxin from strain NY-5*

10A.....	NY-5.....	Between 0.0000687 c. c. and 0.0000969 c. c. (0.054-0.078 unit, or 2.7-3.9 NSTD).
10B.....	Composite of above seven toxins	Between 0.0002031 c. c. and 0.0003969 c. c. (0.162-0.318 unit, or 8.1-15.9 NSTD).

*D. Antitoxin B concentrated, containing approximately 3,000 units (150,000 NSTD) per c. c.*

11A.....	NY-5.....	Between 0.0000213 c. c. and 0.0000306 c. c. (0.064-0.092 unit, or 3.2-4.6 NSTD).
11B.....	Composite of above seven toxins	Between 0.0000417 c. c. and 0.0000782 c. c. (0.126-0.234 unit, or 6.3-11.7 NSTD).

*E. Commercial antitoxin C concentrated, containing approximately 350 units (17,500 NSTD) per c. c. and prepared with the combined toxins of strains D-IV and NY-5*

12A.....	NY-5.....	With less than 0.000165 c. c. (0.058 unit, or 2.9 NSTD).
12B.....	Homologous toxin (D-IV and NY-5).	Between 0.000314 c. c. and 0.000467 c. c. (0.11-0.16 unit, or 5.5-8.0 NSTD).
12C.....	Composite of above seven toxins	With less than 0.000227 c. c. (0.08 unit, or 4.0 NSTD).

TABLE 2.—Summary of the data contained in protocols 1 to 14, inclusive, showing the neutralizing value of different scarlet fever streptococcus antitoxins for the concentrated and purified toxins prepared from various "strains" of hemolytic streptococci, neutralization being measured by the reactions resulting from the intradermal injection of various mixtures of toxin-antitoxin into the skin on the ventral surface of the ears of white rabbits—Continued

*F. Commercial antitoxin D concentrated, containing approximately 300 units (15,000 NSTD) per c. c. and prepared with the combined toxins of strains D-I, D-II, D-III, D-IV and NY-5*

Data from protocol number	Strain of toxin used	Amount of antitoxin required to effect the neutralization of 25 skin test doses of the toxin indicated
13A.....	NY-5.....	Between 0.00032 c. c. and 0.00044 c. c. (0.096-0.132 unit, or 4.8-6.6 NSTD).
13B.....	Composite of D-II, D-III, D-IV and NY-5.	With 0.00027 c. c. (0.082 unit, or 4.1 NSTD).

*G. Commercial antitoxin E concentrated, containing approximately 350 units (16,500 NSTD) per c. c. and prepared with the combined toxins of strains D-I, D-II, D-III and D-IV*

14A.....	NY-5.....	Between 0.00404 c. c. and 0.00555 c. c. (1.334-1.832 units, or 66.7-91.6 NSTD).
14B.....	Composite of D-II, D-III, and D-IV.	Between 0.001361 c. c. and 0.001966 c. c. (0.452-0.638 unit, or 22.6-31.9 NSTD).

Summary Table 2A shows the neutralizing action of National Institute of Health standard antitoxin against seven separate toxins and two composite toxins. This is an unconcentrated antitoxin prepared with a NY-5 antigen and very carefully standardized to contain 500 units (25,000 NSTD) per cubic centimeter in its undiluted state. Thus neutralization of NY-5 toxin becomes the neutralization of its homologous toxin, but it will be seen from the protocols and Table 2A that the other toxins and the composite toxins are equally well neutralized with the same quantity of antitoxin. The surprising fact is that so little antitoxin is required to neutralize 25 human skin test doses of toxin in the rabbit as compared with the human. It will be observed as this study progresses that this toxin-antitoxin relationship does not vary as long as NY-5 antigen has entered into the antitoxin production.

Table 2B shows the neutralizing value of commercial antitoxin A on the same single strain and composite toxins as were used with the standard antitoxin. Antitoxin A is a concentrated antitoxin made with D-I, D-II, D-III, and D-IV antigen. This antitoxin has not been standardized with the same care as was used in standardizing the National Institute of Health's standard antitoxin yet sufficient human subjects were used to warrant the conclusion that it did contain approximately 360 units per cubic centimeter. Its neutralizing ability in the rabbit varied widely from that of the standard antitoxin. Toxins NY-5, D-IV, D-II, HL-391, and NY-55 failed to be neutralized with 0.00362 c. c., or 1.3 units (65 NSTD). Toxin C-203 was neutralized with 0.36 to 0.5 units (18 to 25 NSTD), and toxin D-III with less than 0.3 units (15 NSTD). A composite toxin

of all seven strains failed to be neutralized with 1.3 units (65 NSTD). However, when an homologous toxin (except for the omission of toxin D-I) was used, the quantity of antitoxin required to neutralize was 0.66 to 0.86 units (33 to 43 NSTD).

A third neutralization series was run using as the neutralizing antitoxin antitoxin B, unconcentrated. This is in fact the same type of antitoxin as the National Institute of Health standard, except for the fact that the former contains 800 units (40,000 NSTD) per cubic centimeter. Table 2C shows its neutralizing ability against the homologous toxin and against the same composite toxin as was used in protocols 8A and 8B. (See Table 2A and 2B.) Neutralization of the homologous toxin was affected with 0.054 to 0.078 units (2.7 to 3.9 NSTD) which is the same as required of the standard antitoxin. A trifle more, 0.162 to 0.318 units (8.1 to 15.9 NSTD) was required to neutralize the composite toxin.

The manufacturer of antitoxin B submitted to the National Institute of Health a sample batch of concentrated antitoxin B which was labelled "For experimental purposes," with an accompanying letter stating that "it appears to contain in the neighborhood of 3,500 units per c. c." It was tested at 3,000 units (150,000 NSTD) against the same toxins as were used with unconcentrated antitoxin B. It will be seen from Table 2D that the neutralizing qualities of this concentrated antitoxin, even at this extremely high antitoxic value, equaled the neutralizing value of both the unconcentrated antitoxin B and the standard antitoxin.

Commercial antitoxin C is a concentrated antitoxin prepared with toxins from strains D-IV and NY-5. The lot used in this study was standardized at 350 units (17,500 NSTD). It was titrated on rabbits against toxin NY-5, its homologous composite toxin (D-IV plus NY-5), and against the composite toxin representing all seven strains used. Neutralization occurred in each instance (Table 2E) with essentially the same quantities of antitoxin C as were required of the standard antitoxin or antitoxin B.

A third commercial antitoxin, prepared with toxins from strains D-I, D-II, D-III, D-IV, and NY-5, was designated as antitoxin D. It is a concentrated antitoxin containing approximately 300 units (15,000 NSTD) per cubic centimeter. It was titrated against toxin NY-5 and the homologous composite toxin (except for strain D-I, which was discarded because of its poor toxin yield). The amount of antitoxin required in each instance was the same as that required when neutralizing these toxins with standard antitoxin unconcentrated, antitoxin B unconcentrated, antitoxin B concentrated, or antitoxin C concentrated. (See Table 2F.)

## PROTOCOL 8

The neutralization of purified and concentrated scarlet fever streptococcus toxin at 15,000 skin test doses per cubic centimeter and which is composed of equal parts by titer of toxins from strains NY-5, D-IV, D-II, HL-391, NY-55, C-203, and D-III with—

A. Standard antitoxin diluted to contain 80 units (4,000 neutralizing skin test doses) per c. c.

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of composite toxin plus following quantities of standard antitoxin						Composite toxin control 1 STD
			0.000625 c. c., or 0.05 unit 2.5 NSTD	0.000875 c. c., or 0.07 unit 3.5 NSTD	0.00125 c. c., or 0.1 unit 5.0 NSTD	0.001875 c. c., or 0.15 unit 7.5 NSTD	0.0025 c. c., or 0.2 unit 10 NSTD	0.005 c. c., or 0.4 unit 20 NSTD	
695	24 48	13×17+	0 0	0 0	0 0	0 0	0 0	0 0	0 0
696	24 48	19×24+	17×25+	0 0	0 0	0 0	0 0	0 0	14×15+
697	24 48	11×16+	0 8×12+	0 0	0 0	0 0	0 0	0 0	12×20+
698	24 48	17×24+	12×15+	0 0	0 0	0 0	0 0	0 0	15×22+
699	24 48	14×15+	7×10± 14×25+	10×12± 15×20+	0 0	0 0	0 0	0 0	14×15+

B. Commercial antitoxin A at 360 units (18,000 neutralizing skin test doses) per c. c.

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of composite toxin plus following quantities of antitoxin A						Composite toxin control 1 STD
			0.000835 c. c., or 0.5 unit 15 NSTD	0.00139 c. c., or 0.5 unit 25 NSTD	0.001945 c. c., or 0.7 unit 35 NSTD	0.0025 c. c., or 0.9 unit 45 NSTD	0.003011 c. c., or 1.1 unit 55 NSTD	0.00362 c. c., or 1.3 unit 65 NSTD	
700	24 48	16×20+	14×25++	15×30+	15×15+	15×17+	12×14+	14×15+	16×20++
701	24 48	18×22+	17×20+	10×10±	0 0	0 0	0 0	0 0	13×20±
702	24 48	14×20+	12×15+	13×15±	10×12±	12×16+	0 0	12×12+	12×12+
717	24 48	17×19+	19×30++	13×17+	15×16+	12×12+	11×13+	14×17+	22×25+
718	24 48	22×35++	19×25++	16×25+	18×22+	14×22+	16×17++	16×26+	17×26+

NOTE.—No record is made in this protocol or in the succeeding protocols of those 48-hour readings which did not exceed in size or intensity the corresponding 24-hour reading. Actually all rabbits were observed at 18-24 hours and again at 40-48 hours. Early in the work, observations were also made at 72 and 96 hours. Only rarely did a reaction develop after 48 hours.

## PROTOCOL 12

The neutralizing action of concentrated scarlet fever streptococcus antitoxin C against—

A. Purified and concentrated toxin, strain NY-5, at 186,000 skin test doses per c. c.

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of NY-5 toxin plus following quantities of antitoxin C					
			0.000165 c. c.	0.000335 c. c.	0.0005 c. c.	0.000665 c. c.	0.001335 c. c.	0.00165 c. c.
500	24 48	18×22++	0 8×8±	0 0	0 0	0 0	0 0	0 0
501	24 48	14×15±	0 0	0 0	0 0	0 0	0 0	0 0
502	24 48	13×20±	0 0	0 0	0 0	0 0	0 0	0 0
503	24 48	18×18+	6×9± 0	0 0	0 0	0 0	0 0	0 0
504	24 48	15×22+	(?) 15×15+	(?) 0	(?) 0	(?) 0	(?) 0	(?) 0

<sup>1</sup> Rabbit dead of snuffles and pneumonia before 48 hour reading.

*The neutralizing action of concentrated scarlet fever streptococcus antitoxin C against—Continued*

*B. Composite toxin at 15,000 STD per c. c. (containing equal portions by titer of toxins from strains NY-5 and D-IV)*

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of composite toxin plus following quantities of antitoxin C						Composite toxin control 1 STD
			0.00014 c. c.	0.000285 c. c.	0.00043 c. c.	0.000565 c. c.	0.000855 c. c.	0.001145 c. c.	
625	24	17×25++	10×15+	8×15+	0	0	0	0	14×20+
	48		14×23+	10×15+	5×6±	5×6±	6×6±	6×6±	
626	24	12×17+	10×16±	8×12±	0	0	0	0	13×20+
	48		17×20+	12×17+	10×12±	0	0	0	
627	24	8×10±	0	0	0	0	0	0	8×10±
	48		8×10±	7×10±	0	0	0	0	
628	24	16×20+	0	0	0	0	0	0	14×16+
	48		8×12±	9×11±	6×7±	0	0	0	
629	24	18×30+	14×16+	14×20+	0	0	0	0	15×25+
	48		15×20+	13×23+	0	0	0	0	

*C. Composite toxin at 15,000 STD per c. c. (containing equal parts by titer of toxins from strains NY-5, D-IV D-II, HL-391, NY-56, C-403 and D-III)*

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of composite toxin plus following quantities of antitoxin C						Composite toxin control 1 STD
			0.00014 c. c.	0.000285 c. c.	0.00043 c. c.	0.000565 c. c.	0.000855 c. c.	0.001145 c. c.	
630	24	13×15+	0	0	0	0	0	0	11×15±
	48		0	0	0	0	0	0	
631	24	12×17+	0	0	0	0	0	0	10×13±
	48		0	0	0	0	0	0	
632	24	13×18±	8×8+	6×6±	0	0	0	0	10×15+
	48		12×12+	0	0	0	0	0	
633	24	14×22+	17×20+	0	0	0	0	0	15×20+
	48		20×22+	0	0	0	0	0	
634	24	17×30++	10×14±	0	0	0	0	0	18×30+
	48		12×16+	0	0	0	0	0	

### PROTOCOL 13

*The neutralizing action of concentrated scarlet fever streptococcus antitoxin D against—*

*A. Purified and concentrated toxin, strain NY-5, at 196,000 skin test doses per c. c.*

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of toxin NY-5 plus following quantities of antitoxin D						
			0.0001 c. c.	0.0002 c. c.	0.0003 c. c.	0.0004 c. c.	0.0006 c. c.	0.0008 c. c.	
585	24	25×38++	17×18+	15×20±	15×19±	8×5±	0	0	
	48					0	0	0	
586	24	20×31++	17×20+	15×15+	10×15+	0	5×6±	0	
	48		18×30++	16×25+	20×25++	13×15+	15×25++	0	
587	24	16×28+	14×17+	8×14±	0	0	0	0	
	48		18×20+	14×22+	0	0	0	0	
588	24	20×26+	18×20+	19×20+	0	0	0	0	
	48			0	0	0	0	0	
589	24	16×20+	17×17+	15×25+	7×7±	0	0	0	
	48			20×25+	14×15±	0	0	0	

*The neutralizing action of concentrated scarlet fever streptococcus antitoxin D against—Continued*

*B. Composite toxin at 15,000 STD per c. c. (containing equal portions by titer of toxins from strains NY-5 D-IV, D-II and D-III)*

Animal number	Hours of reading	NY-5 toxin control 1 STD	25 STD of composite toxin plus following quantities of antitoxin D						Composite toxin control 1 STD
			0.0002 c. c.	0.0003 c. c.	0.0004 c. c.	0.0006 c. c.	0.0008 c. c.	0.001 c. c.	
690-----	24	13×16±	0	0	0	0	0	0	0
	48		0	0	0	0	0	0	0
691-----	24	11×17++	6×8±	0	0	0	0	0	10×12±
	48		0	0	0	0	0	0	
692-----	24	12×22+	0	0	0	0	0	0	0
	48		0	0	0	0	0	0	0
693-----	24	16×24+	15×25+	12×22+	6×8±	0	0	0	12×16+
	48		20×30+	15×25+	0	0	0	0	
694-----	24	11×16+	8×8±	0	0	0	0	0	10×12±
	48		0	0	0	0	0	0	

The fourth antitoxin studied is a concentrated antitoxin made with toxin from the same strains as enter into the preparation of commercial antitoxin A. The antitoxin is prepared in a manner similar to that in which antitoxin A is prepared, though by a different commercial laboratory. It has been designated as commercial antitoxin E, and it contained approximately 330 units (16,500 NSTD) per cubic centimeter. The results of rabbit testing are reported in Table 2 G, from which it will be seen that the neutralizing value of this antitoxin on the rabbit is essentially the same as antitoxin A. The slight difference in the values obtained against the homologous composite toxin with these two antisera is probably due to the fact that antitoxin E actually contained more than 330 units per cubic centimeter.

#### DISCUSSION

The present study had for its original purpose the development of a practical laboratory animal method of measuring the potency of scarlet fever streptococcus toxins and antitoxins. Such a method has been developed which, in the hands of the writer, gives end results that are more definite than are obtained by similar neutralization tests on human subjects. This is particularly true if the test antitoxin has been prepared in whole or in part with an antigen containing NY-5 toxin. Antitoxins prepared with antigens other than NY-5 vary more widely in their neutralizing properties on different rabbits and in some instances fail to neutralize except with quantities of antitoxin which are many times the required human neutralizing dose. With NY-5 present in the antigen used to produce the antitoxin, end points are obtained that show small variation from the mean.

The experience has been somewhat similar when human test subjects were used. A total of 94 suitable human subjects received on the one arm a series of intradermal injections of toxin-antitoxin

mixtures in which antitoxin NY-5 was not represented, and on the other arm a control series of similar injections in which NY-5 was represented. The latter gave satisfactory readings in 60 per cent of the test subjects, as against only 40 per cent in the former. In 69 other suitable human subjects similar injections were made, except for the fact that NY-5 was represented in the antitoxin under test as well as in the control mixture. Forty-three per cent of these test subjects gave satisfactory end points with both test and control antitoxin as compared to the former series where there was a discrepancy of 20 per cent.

Aside from developing this rabbit ear method of testing, the present work has brought out a striking difference in the neutralizing value of different antitoxins. It will be seen from the individual protocols and the summary table that the single strain NY-5 standard antitoxin required only 0.06 to 0.1 units (3 to 5 NSTD) in order completely to neutralize the reaction produced by 25 human skin test doses of the single strain or composite toxins studied. However, those antitoxins which had not been prepared with a NY-5 containing antigen actually required a very much greater quantity of antitoxin for the neutralization of the reaction produced by the toxin. Against five of the single strain toxins and the heterologous composite toxin the quantity of antitoxin A required exceeded 1.3 units (65 NSTD), whereas with two other single strain toxins the required quantity did not exceed 0.5 unit (25 NSTD) and with a homologous composite toxin slightly more than 0.5 unit (25 NSTD) was required. Similar results were obtained with commercial antitoxin E which likewise had not been prepared with a NY-5 containing antigen.

One single strain NY-5 antitoxin was available, and this neutralized in a manner similar to the standard antitoxin. Two multiple strain commercial antitoxins included NY-5 in their antigen. It was thought that these antitoxins would neutralize with quantities of antitoxin between that required of the standard antitoxin and commercial antitoxin A; the exact amount depending upon the absolute amount of each strain entering into the respective antigen used. However, this was not the case. In each instance these multistrained antitoxins neutralized in the same manner as the single strain NY-5 antitoxin.

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## COURT DECISION RELATING TO PUBLIC HEALTH

*Production of health department's records showing treatment for communicable disease at clinic not compelled.*—(New York Supreme Court, Appellate Division; *McGowan v. Metropolitan Life Ins. Co.*, \* 255 N. Y. S. 130; decided Jan. 29, 1932.) In an action by a beneficiary to recover on an insurance policy, the defendant company moved for a subpoena duces tecum, addressed to the New York City Department of Health, directing the production of records showing the treatment of the deceased for a communicable disease at the health department's clinics. A section of the sanitary code and a regulation adopted thereunder provided that the records of the health department should not be open to inspection by the public or to any person other than the representatives of the department and such persons as may be authorized by law to inspect such records. The appellate division denied the motion, saying that the rule of the department was a sufficient ground for such denial and that "to divulge to the world the secrets of a patient would not only be shocking but against public policy." In the course of the opinion the court also said:

To induce those who are afflicted with a communicable disease to submit to examination and treatment in an effort to eradicate such diseases and protect the public who might come in contact with those suffering from same, the department of health has established clinics for their use, with the assurance that the information thus obtained will not be divulged and that the records containing such information will not be open for inspection by the public. If that assurance can not be relied upon, those so afflicted may refuse such aid, with the result that they may endanger the health of the public at large. The security inspired by such a rule gives confidence to those requiring treatment and encourages them to cooperate with the department of health in an effort to control or eradicate such diseases.

\* See PUBLIC HEALTH REPORTS, Jan. 22, 1932, Vol. 47, No. 4, p. 202, for report of case in lower court.

## DEATHS DURING WEEK ENDED APRIL 16, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended April 16, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Apr. 16, 1932	Correspond- ing week, 1931
Policies in force.....	73, 637, 230	75, 146, 342
Number of death claims.....	16, 103	15, 930
Death claims per 1,000 policies in force, annual rate..	11. 4	11. 1
Death claims per 1,000 policies, first 15 weeks of year, annual rate.....	10. 6	11. 2

Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended April 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr. 16, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 15 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	8, 398	12. 0	668	56	12. 0	807	12. 6	13. 9
Akron.....	23	4. 5	3	37	8. 7	6	7. 5	8. 7
Albany.....	39	15. 6	3	61	17. 8	6	15. 1	15. 7
Atlanta.....	61	11. 3	5	49	13. 9	6	14. 3	16. 1
White.....	31	8. 6	2	29	12. 4	3	11. 2	13. 0
Colored.....	30	16. 4	3	86	16. 8	3	20. 3	22. 8
Baltimore.....	240	15. 3	21	74	15. 9	21	15. 0	17. 3
White.....	180	14. 0	15	68	14. 0	16	13. 9	15. 9
Colored.....	60	20. 9	6	96	24. 5	6	19. 9	23. 7
Birmingham.....	60	11. 3	4	42	17. 0	4	12. 2	15. 9
White.....	27	8. 2	1	16	15. 3	2	9. 9	12. 4
Colored.....	33	16. 4	3	81	19. 8	2	15. 8	21. 6
Boston.....	237	15. 7	23	70	15. 4	25	15. 7	16. 3
Bridgeport.....	29	10. 3	5	89	12. 8	4	12. 1	13. 1
Buffalo.....	150	13. 3	14	67	14. 0	15	14. 3	15. 4
Cambridge.....	35	16. 0	4	83	11. 4	1	14. 3	13. 8
Camden.....	31	13. 6	3	53	12. 3	5	16. 3	17. 7
Canton.....	18	8. 7	2	50	10. 7	1	10. 6	11. 3
Chicago.....	656	9. 7	59	58	11. 3	79	10. 9	11. 9
Cincinnati.....	158	17. 9	9	58	14. 3	8	17. 0	18. 3
Cleveland.....	238	13. 5	20	65	12. 9	20	12. 2	12. 8
Columbus.....	66	11. 5	5	50	12. 9	4	14. 7	15. 2
Dallas.....	53	9. 8	0	—	13. 7	8	11. 6	12. 8
White.....	35	7. 8	0	—	11. 3	6	10. 7	11. 2
Colored.....	18	19. 3	0	—	25. 3	2	16. 2	20. 4
Dayton.....	44	9. 7	2	29	8. 8	2	11. 8	13. 8
Denver.....	76	13. 5	10	98	15. 6	7	16. 6	15. 2
Des Moines.....	35	12. 5	2	34	11. 9	3	12. 7	12. 2
Detroit.....	228	6. 9	23	41	9. 4	43	8. 6	9. 8
Duluth.....	23	11. 8	1	29	12. 3	2	10. 4	12. 0
El Paso.....	19	9. 3	3	—	15. 4	4	14. 9	17. 7
Erie.....	24	10. 5	3	64	12. 4	4	12. 3	11. 9
Evansville.....	20	9. 9	1	33	13. 5	2	10. 3	12. 9
Fall River.....	38	17. 2	3	80	10. 0	1	13. 5	13. 3
Flint.....	26	8. 0	1	15	8. 3	4	9. 1	7. 8
Fort Wayne.....	21	9. 1	1	26	10. 6	0	11. 1	12. 1
Fort Worth.....	46	14. 1	3	—	10. 9	4	11. 0	12. 1
White.....	40	14. 5	3	—	10. 0	2	10. 6	11. 7
Colored.....	6	11. 7	0	—	15. 3	2	13. 1	14. 1
Grand Rapids.....	25	7. 5	0	0	12. 8	8	9. 5	9. 9
Houston.....	71	11. 4	5	—	12. 3	6	11. 2	11. 7
White.....	48	10. 5	3	—	10. 8	5	10. 6	10. 8
Colored.....	23	14. 0	2	—	16. 3	1	13. 1	14. 4
Indianapolis.....	92	12. 8	4	32	14. 1	8	14. 0	15. 4
White.....	78	12. 4	4	37	14. 8	7	13. 5	14. 9
Colored.....	14	15. 9	0	0	9. 2	1	17. 3	19. 1

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Apr. 16, 1932				Corresponding week 1931		Death rate <sup>2</sup> for the first 15 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Jersey City.....	72	11.7	7	58	11.1	7	12.0	12.8
Kansas City, Kans. <sup>4</sup> .....	29	12.2	2	44	14.4	4	13.4	15.7
White.....	25	13.1	2	54	12.1	3	13.0	14.4
Colored.....	4	8.8	0	0	24.4	1	15.0	21.4
Kansas City, Mo.....	97	12.2	5	67	14.7	17	13.4	15.3
Knoxville <sup>5</sup> .....	30	14.0	0	0	13.4	5	13.0	14.5
White.....	26	14.5	0	0	10.3	5	12.0	13.3
Colored.....	4	11.4	0	0	29.3	0	18.3	20.7
Long Beach.....	33	10.7	0	0	11.6	0	10.2	10.9
Los Angeles.....	263	9.9	18	53	11.6	28	11.6	11.6
Louisville <sup>6</sup> .....	80	13.5	2	18	13.7	5	14.6	17.6
White.....	61	12.2	2	21	12.0	5	13.1	15.7
Colored.....	19	20.8	0	0	23.0	0	23.0	27.5
Lowell <sup>7</sup> .....	27	14.1	4	105	12.0	2	14.9	14.7
Lynn.....	18	9.1	0	0	10.7	0	12.2	12.4
Memphis <sup>8</sup> .....	86	17.1	8	37	20.3	11	17.2	18.3
White.....	49	15.7	5	35	14.0	6	13.2	15.4
Colored.....	37	19.2	3	90	30.6	5	23.6	23.0
Miami <sup>9</sup> .....	26	11.9	3	34	15.3	2	12.8	14.6
White.....	17	10.0	1	39	16.1	1	11.8	13.8
Colored.....	9	18.6	2	201	12.4	1	16.0	17.4
Milwaukee.....	111	9.6	9	43	9.4	10	9.5	10.7
Minneapolis.....	82	8.9	7	46	11.7	12	11.4	12.3
Nashville <sup>10</sup> .....	38	12.7	8	45	15.4	7	15.2	18.6
White.....	18	8.3	3	59	13.4	5	14.1	16.0
Colored.....	20	24.4	0	0	20.7	2	18.4	25.3
New Bedford <sup>11</sup> .....	40	18.6	1	29	13.0	8	13.9	13.3
New Haven.....	47	15.1	2	40	12.2	3	13.9	13.7
New Orleans <sup>12</sup> .....	145	16.0	16	91	15.6	9	16.0	19.1
White.....	91	14.1	9	78	12.1	5	13.6	15.6
Colored.....	54	20.6	7	114	24.4	4	21.8	27.7
New York.....	1,645	11.9	146	65	12.4	165	12.0	13.4
Bronx Boro.....	221	8.4	20	58	9.0	20	8.9	9.7
Brooklyn Boro.....	607	11.8	55	61	11.6	64	11.2	12.5
Manhattan Boro.....	626	13.4	59	84	18.7	55	13.4	20.4
Queens Boro.....	156	6.7	12	80	8.4	24	7.7	8.7
Richmond Boro.....	35	10.9	0	0	12.1	2	14.6	14.2
Newark, N. J.....	86	10.0	0	33	11.9	5	11.9	13.7
Oakland.....	70	12.2	4	30	9.8	4	11.6	11.8
Oklahoma City.....	49	12.4	4	55	11.9	2	10.5	12.3
Omaha.....	58	13.9	0	0	11.1	3	15.1	14.4
Paterson.....	33	12.4	2	36	20.7	6	14.2	16.3
Peoria.....	25	11.8	3	33	10.6	1	12.6	13.8
Philadelphia.....	529	14.0	39	60	14.7	50	14.1	16.1
Pittsburgh.....	108	12.9	22	101	17.4	20	14.9	17.9
Portland, Oreg.....	58	9.7	5	64	11.5	1	12.3	12.7
Providence.....	70	14.3	8	77	15.3	4	15.6	15.3
Richmond <sup>13</sup> .....	54	15.2	7	105	20.7	7	14.9	18.3
White.....	38	15.0	3	67	17.1	3	12.5	15.5
Colored.....	16	15.8	4	133	29.6	4	20.9	26.1
Rochester.....	94	14.7	3	29	12.9	8	12.9	13.9
St. Louis.....	204	12.3	11	39	15.6	6	14.3	15.2
St. Paul.....	62	11.6	3	32	11.1	6	11.2	11.7
Salt Lake City <sup>14</sup> .....	30	10.8	3	47	11.7	1	11.5	12.9
San Antonio.....	74	15.7	15	17	17.4	13	15.0	15.2
San Diego.....	43	13.8	1	22	13.0	3	16.2	15.4
San Francisco.....	151	11.9	4	28	12.8	4	13.7	14.4
Schenectady.....	27	14.6	3	37	11.9	1	11.8	12.3
Seattle.....	58	12.3	1	10	10.5	2	12.3	13.1
Somerville.....	21	10.3	1	40	11.4	4	10.6	11.2
South Bend.....	17	8.0	1	29	7.2	0	8.1	9.2
Spokane.....	30	13.4	4	107	18.4	3	12.8	13.5
Springfield, Mass.....	39	13.2	1	17	13.7	4	12.2	13.8
Syracuse.....	65	15.7	5	64	13.7	3	12.7	12.9
Tacoma.....	27	13.0	2	55	15.0	6	12.4	14.8
Tampa <sup>15</sup> .....	25	12.1	0	0	7.0	0	12.7	14.3
White.....	14	8.6	0	0	6.9	0	12.1	13.1
Colored.....	11	25.2	0	0	7.0	0	15.1	18.8
Toledo.....	67	11.6	6	65	12.1	9	12.9	13.7
Trenton.....	30	12.6	5	99	20.6	3	17.7	19.6
Utica.....	44	22.4	3	35	15.8	1	17.1	16.8

<sup>1</sup> See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 16, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued.*

City	Week ended Apr. 16, 1932				Corresponding week 1931		Death rate <sup>2</sup> for the first 15 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Washington, D. C. <sup>6</sup> .....	157	16.6	13	73	15.8	9	17.6	18.4
White.....	94	13.8	7	57	14.1	5	15.9	15.9
Colored.....	63	24.1	6	107	20.5	4	21.9	25.0
Waterbury.....	26	13.4	3	99	9.8	1	10.7	11.2
Wilmington, Del. <sup>7</sup> .....	27	13.2	1	23	13.7	2	18.1	17.0
Worcester.....	41	10.8	1	14	15.3	6	13.4	15.2
Yonkers.....	27	9.9	2	52	8.3	0	8.7	10.2
Youngstown.....	31	9.2	1	16	10.0	3	11.0	11.7

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930, decreased 1920 to 1930, no estimated made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended April 23, 1932, and April 25, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 23, 1932, and April 25, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr 23, 1932	Week ended Apr 25, 1931	Week ended Apr 23, 1932	Week ended Apr 25, 1931	Week ended Apr 23, 1932	Week ended Apr 25, 1931	Week ended Apr 23, 1932	Week ended Apr 25, 1931
<b>New England States:</b>								
Maine.....		6	2	16	152	2	1	0
New Hampshire.....	1	2			29	31	0	0
Vermont.....	1				119	1	0	0
Massachusetts.....	20	32	4	7	733	496	3	1
Rhode Island.....	11	9		1	139	35	0	0
Connecticut.....	8	11	8	7	160	754	0	2
<b>Middle Atlantic States:</b>								
New York.....	116	95	134	121	2,271	2,367	10	7
New Jersey.....	30	59	22	8	739	930	1	6
Pennsylvania.....	65	87			2,265	4,483	10	10
<b>East North Central States:</b>								
Ohio.....	32	22	20	24	1,145	1,097	2	4
Indiana.....	33	34	50	21	88	1,118	9	12
Illinois.....	73	77	124	5	1,047	1,961	6	23
Michigan.....	19	25	12	4	1,966	103	4	9
Wisconsin.....	15	12	101	77	1,055	729	0	2
<b>West North Central States:</b>								
Minnesota.....	7	14	5	1	22	105	1	2
Iowa.....	10	8			2	113	0	3
Missouri.....	20	39	13	27	109	454	1	16
North Dakota.....	5	1			38	14	0	1
South Dakota.....	3	4			11	46	0	3
Nebraska.....	4	6			3	3	1	0
Kansas.....	6	7	1	12	540	54	0	0
<b>South Atlantic States:</b>								
Delaware.....	4	2	1			168	0	0
Maryland <sup>1</sup> .....	16	14	51	16	27	1,392	0	1
District of Columbia.....	7	13	3	2	12	287	0	1
West Virginia.....	10	10	131	17	800	67	1	2
North Carolina.....	11	17	172	15	599	518	0	5
South Carolina.....	6	14	1,484	703	150	199	0	2
Georgia <sup>1</sup> .....	14	6	142	85	34	86	5	3
Florida.....	20	4	5	5	3	227	0	3

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Apr. 23, 1932, 4 cases: 3 cases in Georgia, and 1 case in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended April 23, 1932, and April 25, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931
<b>East South Central States:</b>								
Kentucky.....	6	—	178	—	82	128	1	3
Tennessee.....	11	1	342	153	237	132	4	5
Alabama.....	17	15	140	51	21	304	2	2
Mississippi.....	8	4	—	—	—	—	0	0
<b>West South Central States:</b>								
Arkansas.....	4	5	183	163	6	30	4	0
Louisiana.....	17	19	13	19	86	3	2	4
Oklahoma.....	18	15	151	110	16	16	0	4
Texas.....	29	17	300	81	383	3	0	0
<b>Mountain States:</b>								
Montana.....	1	3	5	—	73	7	1	2
Idaho.....	1	2	—	23	1	—	0	2
Wyoming.....	—	—	—	1	23	1	0	0
Colorado.....	10	5	—	—	125	158	0	0
New Mexico.....	9	1	3	56	77	91	0	1
Arizona.....	7	4	6	5	1	17	2	0
Utah.....	1	2	—	7	—	7	0	1
<b>Pacific States:</b>								
Washington.....	4	6	4	—	342	30	0	3
Oregon.....	2	5	40	97	293	187	0	0
California.....	83	55	65	276	619	1,568	3	7
<b>Total.....</b>	<b>790</b>	<b>790</b>	<b>3,815</b>	<b>2,056</b>	<b>16,153</b>	<b>20,714</b>	<b>74</b>	<b>152</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931
<b>New England States:</b>								
Maine.....	0	0	41	26	0	0	1	0
New Hampshire.....	0	0	48	6	0	0	1	0
Vermont.....	0	0	14	4	4	0	1	0
Massachusetts.....	0	2	473	334	0	0	2	3
Rhode Island.....	0	0	63	77	0	0	2	0
Connecticut.....	0	0	119	58	0	0	0	2
<b>Middle Atlantic States:</b>								
New York.....	2	3	1,617	966	10	2	11	9
New Jersey.....	1	0	304	838	0	0	1	5
Pennsylvania.....	0	1	596	634	0	0	8	6
<b>East North Central States:</b>								
Ohio.....	0	0	280	367	13	43	11	4
Indiana.....	0	0	150	216	6	125	2	4
Illinois.....	1	0	442	551	3	38	2	4
Michigan.....	0	1	465	293	3	39	5	3
Wisconsin.....	0	1	63	170	0	24	1	1
<b>West North Central States:</b>								
Minnesota.....	0	0	155	87	3	5	3	0
Iowa.....	2	0	62	75	44	81	1	1
Missouri.....	1	0	68	263	6	30	3	4
North Dakota.....	0	0	16	8	0	2	0	0
South Dakota.....	0	0	3	18	4	32	2	1
Nebraska.....	0	0	20	26	10	24	0	0
Kansas.....	0	1	65	59	3	136	0	3
<b>South Atlantic States:</b>								
Delaware.....	0	0	16	20	0	0	0	0
Maryland.....	0	0	108	71	0	0	8	0
District of Columbia.....	0	0	26	28	0	0	0	0
West Virginia.....	0	0	29	64	1	5	3	4
North Carolina.....	0	0	53	41	3	3	6	1
South Carolina.....	0	1	4	9	0	3	6	6
Georgia.....	0	0	16	69	1	0	9	3
Florida.....	0	0	8	4	0	0	16	2

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Apr. 23, 1932, 4 cases: 3 cases in Georgia, and 1 case in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 23, 1932, and April 25, 1931—Continued*

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931	Week ended Apr. 23, 1932	Week ended Apr. 25, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	92	49	1	14	0	1
Tennessee.....	0	0	27	41	16	17	12	4
Alabama.....	1	0	14	19	25	4	13	2
Mississippi.....	0	1	8	14	29	51	5	3
<b>West South Central States:</b>								
Arkansas.....	0	0	4	26	3	51	5	7
Louisiana.....	2	0	15	23	3	36	14	9
Oklahoma.....	0	1	21	40	12	68	16	11
Texas.....	1	0	36	43	87	54	6	10
<b>Mountain States:</b>								
Montana.....	0	0	13	45	5	2	1	1
Idaho.....	0	0	4	3	1	1	0	2
Wyoming.....	0	0	4	11	0	2	1	0
Colorado.....	0	0	29	30	1	2	1	1
New Mexico.....	0	0	16	4	1	1	1	5
Arizona.....	0	0	9	7	0	0	1	0
Utah.....	0	1	2	10	0	0	1	1
<b>Pacific States:</b>								
Washington.....	0	0	31	23	14	23	0	4
Oregon.....	0	0	19	14	16	33	4	0
California.....	5	7	182	154	16	46	11	10
<b>Total</b>	<b>17</b>	<b>20</b>	<b>5, 850</b>	<b>5, 485</b>	<b>344</b>	<b>997</b>	<b>197</b>	<b>137</b>

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Apr. 23, 1932, 4 cases 3 cases in Georgia, and 1 case in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Me-ningo-coccus menin-gitis	Diph-theria	Influ-enza	Ma-laria	Mea-sles	Pe-lagria	Polio-my-e-litis	Scarlet fever	Small-pox	Ty-phoid fever
<i>March, 1932</i>										
Alabama.....	4	88	383	37	23	29	0	82	45	27
California.....	23	330	745	8	2, 732	3	18	771	64	34
Idaho.....		6	19		7		3	35	15	6
Illinois.....	24	354	1, 051	12	1, 602		1	1, 828	65	37
Maryland.....	10	86	1, 370		234	1	0	633	0	14
Michigan.....	20	132	498	1	3, 760		3	2, 066	45	35
Minnesota.....	6	51	14		66		2	546	9	6
Missouri.....	3	130	320	3	337		0	298	41	11
New York.....	40	504		5	10, 381		6	7, 810	12	31
Ohio.....	22	206	1, 165		6, 270		4	1, 884	194	20
Porto Rico.....		55		2, 563	147	4	0		0	32
Texas.....	2	204	1, 125	381			0	165		16
West Virginia.....	5	64	1, 447		2, 089		2	136	22	36

March, 1932		Chicken pox:		Cases
Actinomycosis:	Cases	Alabama.....		163
California.....	1	California.....		4, 966
Anthrax:		Idaho.....		37
New York.....	2	Illinois.....		1, 352
Porto Rico.....	2	Maryland.....		565
Botulism:		Michigan.....		1, 119
California.....	1	Minnesota.....		176

Chicken pox—Continued.	Cases	Mumps—Continued.	Cases
Missouri.....	381	New York.....	1,793
New York.....	2,730	Ohio.....	1,010
Ohio.....	1,486	Porto Rico.....	60
Porto Rico.....	61	West Virginia.....	9
West Virginia.....	188	Ophthalmia neonatorum:	
Conjunctivitis:		Illinois.....	4
Maryland.....	2	Maryland.....	3
Dengue:		Missouri.....	1
Alabama.....	1	New York.....	7
Porto Rico.....	3	Ohio.....	67
Diarrhea:		Porto Rico.....	8
Maryland.....	11	Paratyphoid fever:	
Diarrhea and enteritis:		California.....	4
Ohio (under 2 years).....	19	Illinois.....	1
Dysentery:		New York.....	3
California (amebic).....	8	Porto Rico.....	9
California (bacillary).....	16	Psittacosis:	
Illinois.....	9	California.....	4
Maryland.....	4	Puerperal septicemia.	
Missouri.....	2	Illinois.....	7
New York.....	5	New York.....	16
Porto Rico.....	16	Ohio.....	6
Filariasis:		Porto Rico.....	5
Porto Rico.....	8	Rabies in animals:	
Food poisoning:		California.....	72
California.....	10	Illinois.....	6
Ohio.....	8	Maryland.....	2
German measles:		Missouri.....	4
California.....	105	New York.....	6
Illinois.....	35	Rabies in man:	
Maryland.....	32	California.....	1
New York.....	197	Scabies:	
Ohio.....	44	Maryland.....	5
Granuloma:		Septic sore throat:	
California, coccidioidal.....	2	California.....	10
Maryland.....	1	Illinois.....	17
Hookworm disease:		Maryland.....	13
California.....	2	Michigan.....	76
Impetigo contagiosa:		Missouri.....	9
Maryland.....	14	New York.....	64
Jaundice:		Ohio.....	172
California (epidemic).....	5	Tetanus:	
Maryland.....	1	California.....	4
Lead poisoning:		Illinois.....	6
Illinois.....	3	Maryland.....	1
Ohio.....	8	New York.....	1
Leprosy:		Porto Rico.....	7
California.....	1	Tetanus, infantile:	
Ohio.....	1	Porto Rico.....	11
Lethargic encephalitis:		Trachoma:	
California.....	5	California.....	20
Illinois.....	10	Illinois.....	4
Michigan.....	1	Minnesota.....	1
New York.....	14	Missouri.....	23
Ohio.....	6	New York.....	2
West Virginia.....	2	Ohio.....	5
Mumps:		Porto Rico.....	8
Alabama.....	89	Trichinosis:	
California.....	950	California.....	6
Idaho.....	29	Illinois.....	1
Illinois.....	396	New York.....	6
Maryland.....	570	Tularæmia:	
Michigan.....	1,360	Alabama.....	3
Missouri.....	308	Illinois.....	2

\* Exclusive of New York City.



Tularaemia—Continued.	Cases	Vincent's angina:	Cases
Maryland.....	1	Illinois.....	10
Missouri.....	1	Maryland.....	9
New York.....	1	New York <sup>1</sup> .....	88
Ohio.....	1	Whooping cough:	
Typhus fever.		Alabama.....	146
Alabama.....	5	California.....	1,440
Undulant fever:		Idaho.....	8
Alabama.....	1	Illinois.....	1,826
California.....	5	Maryland.....	723
Illinois.....	5	Michigan.....	1,097
Maryland.....	1	Minnesota.....	190
Michigan.....	3	Missouri.....	610
Minnesota.....	3	New York.....	2,580
Missouri.....	5	Ohio.....	3,100
New York.....	19	Porto Rico.....	153
Ohio.....	6	West Virginia.....	374
West Virginia.....	1		

### ADMISSIONS TO HOSPITALS FOR THE INSANE, AUGUST, 1930

Reports for the month of August, 1930, showing new admissions to hospitals for the insane were received by the Public Health Service from 113 hospitals, located in 36 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 177,500 patients on August 31, 1930; 94,619 males and 82,881 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of August, 1930, by psychoses:

Psychoses	Male	Female	Total
1. Traumatic psychoses.....	10	5	15
2. Senile psychoses.....	138	131	269
3. Psychoses with cerebral arteriosclerosis.....	197	111	308
4. General paralysis.....	208	69	277
5. Psychoses with cerebral syphilis.....	24	11	35
6. Psychoses with Huntington's chorea.....	2	3	5
7. Psychoses with brain tumor.....	1	1	2
8. Psychoses with other brain or nervous disease.....	19	16	35
9. Alcoholic psychoses.....	124	14	138
10. Psychoses due to drugs and other exogenous toxins.....	10	6	16
11. Psychoses with pellagra.....	12	20	32
12. Psychoses with other somatic disease.....	26	35	61
13. Manic-depressive psychoses.....	165	243	408
14. Involution melancholia.....	25	41	67
15. Dementia praecox (schizophrenia).....	323	247	570
16. Paranoia and paranoid conditions.....	26	32	58
17. Epileptic psychoses.....	53	36	89
18. Psychoneuroses and neuroses.....	20	37	57
19. Psychoses with psychopathic personality.....	16	7	23
20. Psychoses with mental deficiency.....	65	43	108
21. Undiagnosed psychoses.....	123	83	206
22. Without psychosis.....	181	61	242
Total.....	1,709	1,232	3,021

During the month of August, 1930, there were 3,021 new admissions to the hospitals, 58.6 per cent of these new admissions being males and 41.4 per cent females, the ratio being 141 males per 100 females. Four hundred and forty-eight of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,573 new admissions for whom provisional diagnoses were made. Of these 2,573 patients, cases of dementia praecox constituted 22.2

<sup>1</sup> Exclusive of New York City.

per cent; manic-depressive psychoses, 15.9 per cent; psychoses with cerebral arteriosclerosis, 12.0 per cent; general paralysis, 10.8 per cent; and senile psychoses, 10.5 per cent. These five classes accounted for 71.2 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on August 31, 1930:

	Male	Female	Total
Patients on books Aug. 31, 1930.			
In hospitals.....	85,986	75,841	161,827
On parole or otherwise absent but still on the books.....	8,633	7,040	15,673
Total.....	94,619	82,881	177,500

Of the 177,500 patients, 8,633 males and 7,040 females were on parole or otherwise absent but still on the books at the end of the month: 9.1 per cent of the males, 8.5 per cent of the females, and 8.8 per cent of total number of patients.

#### PLAGUE-INFECTED RAT TRAPPED IN LOS ANGELES, CALIF.

On April 22, 1932, plague infection was reported confirmed in a rat which was trapped in Los Angeles, Calif., 23 miles from the port, San Pedro.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended April 16, 1932, and April 18, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	798	929	-----
98 cities.....	351	424	728
Measles:			
46 States.....	16,909	20,734	-----
98 cities.....	6,395	8,447	-----
Meningococcus meningitis:			
46 States.....	92	147	-----
98 cities.....	40	78	-----
Polioomyelitis:			
46 States.....	21	24	-----
Scarlet fever:			
46 States.....	6,316	5,455	-----
98 cities.....	3,109	2,452	1,494
Smallpox:			
46 States.....	417	1,036	-----
98 cities.....	43	140	67
Typhoid fever:			
46 States.....	157	137	-----
98 cities.....	30	30	20
<i>Deaths reported</i>			
Influenza and pneumonia:			
91 cities.....	898	1,090	-----
Smallpox:			
91 cities.....	0	0	-----

*City reports for week ended April 16, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cas. s, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine								
Portland.....	0	0	0	1	1	32	7	4
New Hampshire.....								
Concord.....	0	0	0		0	1	0	1
Manchester.....	0	0	0		0	0	0	1
Nashua.....	0	0	0		0	0	0	0
Vermont								
Barre.....	0	0	0		0	0	0	0
Burlington.....	0	0	0		0	0	0	0
Massachusetts								
Boston.....	84	27	2	1	0	70	66	20
Fall River.....	4	3	0	1	0	72	2	2
Springfield.....	21	2	2		0	65	19	2
Worcester.....	0	3	0		0	1	19	8
Rhode Island								
Pawtucket.....	0	0	0		0	0	0	0
Providence.....	3	7	3		0	63	6	10
Connecticut								
Bridgeport.....	3	4	2		2	7	0	2
Hartford.....	3	4	2		0	4	8	3
New Haven.....	20	0	1		0	4	20	2
MIDDLE ATLANTIC								
New York								
Buffalo.....	20	9	3		2	5	1	26
New York.....	232	218	87	35	29	223	213	219
Rochester.....	2	4	0		0	110	16	12
Syracuse.....	1	2	1		0	507	7	8
New Jersey								
Camden.....	4	6	1	1	2	1	1	6
Newark.....	29	13	4	4	0	30	97	11
Trenton.....	2	3	0		2	8	6	4
Pennsylvania								
Philadelphia.....	81	59	7	17	13	6	56	58
Pittsburgh.....	51	13	6	5	5	364	23	22
Reading.....	12	1	1		0	1	0	4
EAST NORTH CENTRAL								
Ohio								
Cincinnati.....	6	6	6		9	1	1	12
Cleveland.....	67	21	7	51	2	934	82	17
Columbus.....	6	2	6	1	1	6	2	4
Toledo.....	17	3	0		0	24	0	6
Indiana								
Fort Wayne.....	0	2	4		0	0	0	0
Indianapolis.....	38	3	0		3	8	183	11
South Bend.....	1	1	0		1	6	0	0
Terre Haute.....	0	1	0		1	3	0	1
Illinois								
Chicago.....	106	86	34	3	6	668	22	36
Springfield.....	2	0	0	1	0	0	2	8

## City reports for week ended April 16, 1932—Continued

Division, State, and city	Chick- en pox, cases reported	Diphtheria		Influenza		Meas- les, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—contd.								
Michigan:								
Detroit.....	94	37	15	3	3	322	56	26
Flint.....	8	2	0	21	1	266	50	4
Grand Rapids.....	3	1	0		3	145	15	0
Wisconsin:								
Kenosha.....	1	0	0		0	0	0	1
Madison.....	14	0	0			1	1	
Milwaukee.....	70	9	2	4	4	1,068	23	9
Racine.....	13	3	0		0	202	58	0
Superior.....	3	0	0		0	0	24	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	5	0	0		1	0	3	2
Minneapolis.....	15	10	3		1	13	15	6
St. Paul.....	7	4	1	1	1	0	10	2
Iowa:								
Davenport.....	2	0	0			0	0	
Des Moines.....	0	1	2			0	0	
Sioux City.....	2	1	3			0	4	
Waterloo.....	9	0	0			0	0	
Missouri:								
Kansas City.....	18	3	10		0	10	5	14
St. Joseph.....	0	0	0		0	0	1	5
St. Louis.....	14	28	8	3	3	11	5	13
North Dakota:								
Fargo.....	1	0	0		0	21	0	1
Grand Forks.....	0	0	0			0	0	
South Dakota:								
Aberdeen.....	0	1	0			10	0	
Sioux Falls.....	0	0	0			0	0	
Nebraska:								
Omaha.....	7	3	0		0	1	1	4
Kansas:								
Topeka.....	27	0	0		0	1	9	0
Wichita.....	5	1	1		1	325	8	2
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	3	2	0		0	8	0	1
Maryland:								
Baltimore.....	102	20	7	8	6	4	120	21
Cumberland.....	0	0	0		0	5	0	1
Frederick.....	0	0	0	1	0	0	0	0
District of Columbia:								
Washington.....	21	12	5	2	0	2	0	18
Virginia:								
Lynchburg.....	6	1	0		1	0	0	0
Norfolk.....	1	1	0		0	0	1	8
Richmond.....	2	2	0		1	0	0	6
Roanoke.....	1	0	1		2	0	0	2
West Virginia:								
Charleston.....	0	1	1	2	1	54	0	5
Huntington.....	0		1			2	0	
Wheeling.....	0	0	0		0	4	0	0
North Carolina:								
Raleigh.....	4	0	1		0	12	0	1
Wilmington.....	1	0	0		0	0	0	1
Winston-Salem.....	3	0	1		0	3	2	1
South Carolina:								
Charleston.....	1	0	0	66	0	1	0	2
Columbia.....	2	0	2		0	57	0	10
Greenville.....	4	0	0			9	0	
Georgia:								
Atlanta.....	9	2	6	11	3	0	0	11
Brunswick.....	0	0	0		0	1	0	1
Savannah.....	4	0	1	4	1	0	0	3
Florida:								
Miami.....	14	2	1	2	0	3	0	1
Tampa.....	4	1	0		1	0	0	1

## City reports for week ended April 16, 1932—Continued

Division, State, and city	Chick- en pox, cases reported	Diphtheria		Influenza		Meas- les, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
		Cases, esti- mated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	0		0	0	0	3
Lexington.....	1		4	10	0	1	12	4
Tennessee:								
Memphis.....	5	2	1		2		2	12
Nashville.....	6	0	0		1	0	0	7
Alabama:								
Birmingham.....	5	2	0	25	3	0	2	7
Mobile.....	1	1	1		0	0	0	2
Montgomery.....	4	0	1			0	4	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	1	0	1			0	0	
Little Rock.....	6	0	0		0	0	1	2
Louisiana:								
New Orleans.....	0	10	23		0	0	0	0
Shreveport.....	0	0	1		0	7	9	6
Oklahoma:								
Muskogee.....	3		1			48	1	
Oklahoma City.....	2	1	1	20	4	1	1	15
Texas:								
Dallas.....	6	5	8		0		1	5
Fort Worth.....	17	1	1		3	1	0	3
Galveston.....	0	0	0		0	0	0	0
Houston.....	1	4	3		1	2	0	10
San Antonio.....	0	2	0		5	0	0	4
MOUNTAIN								
Montana:								
Billings.....	0	0	0		0	1	0	0
Great Falls.....	4	0	0		0	1	0	0
Helena.....	1	0	0		0	3	0	0
Missoula.....	0	0	0		0	0	0	1
Idaho:								
Boise.....	0	0	0		0	0	2	0
Colorado:								
Denver.....	39	7	1		1	150	60	7
Pueblo.....	20	0	1		0	0	0	2
New Mexico:								
Albuquerque.....	6	0	0		0	43	9	2
Arizona:								
Phoenix.....	0	0	0		0	0	0	4
Utah:								
Salt Lake City.....	34	2	5		0	0	6	0
Nevada:								
Reno.....	0	0	0		0	0	0	0
PACIFIC								
Washington:								
Seattle.....	24	2	5			193	8	
Spokane.....	22	2	0			2	0	
Tacoma.....	9	1	1		0	40	1	2
Oregon:								
Portland.....	8	7	1	3	0	120	4	2
Salem.....	3	0	0		0	1	10	0
California:								
Los Angeles.....	138	29	37	51	2	12	22	8
Sacramento.....	33	2	9		0	35	3	3
San Francisco.....	77	11	6		0	218	10	11

## City reports for week ended April 16, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland.....	3	5	0	0	0	0	0	0	0	13	19
New Hampshire:											
Concord.....	0	3	0	0	0	0	0	0	0	0	16
Manchester.....	2	0	0	0	0	2	0	0	0	0	23
Nashua.....	0	0	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	1	0	0	0	0	0	0	0	0	6
Burlington.....	0	1	0	2	0	0	0	0	0	0	11
Massachusetts:											
Boston.....	86	180	0	0	0	9	1	0	0	31	237
Fall River.....	4	16	0	0	0	2	1	0	0	2	34
Springfield.....	12	7	0	0	0	0	0	0	0	4	32
Worcester.....	10	56	0	0	0	2	1	0	0	18	41
Rhode Island:											
Pawtucket.....	1	0	0	0	0	0	0	0	0	0	24
Providence.....	13	26	0	0	0	3	0	0	0	8	70
Connecticut:											
Bridgeport.....	10	5	0	0	0	3	0	0	0	2	29
Hartford.....	5	4	0	0	0	1	0	0	0	7	35
New Haven.....	5	27	0	0	0	1	0	0	0	13	47
MIDDLE ATLANTIC											
New York:											
Buffalo.....	28	135	0	0	0	5	9	0	0	31	143
New York.....	321	1,019	0	0	0	103	0	1	0	196	1,645
Rochester.....	11	64	0	0	0	3	0	0	0	4	87
Syracuse.....	16	31	0	0	0	0	0	0	0	71	65
New Jersey:											
Camden.....	5	36	0	0	0	0	0	0	0	2	31
Newark.....	34	34	0	0	0	4	0	0	0	48	46
Trenton.....	5	6	0	0	0	3	0	0	0	5	30
Pennsylvania:											
Philadelphia.....	103	267	0	0	0	29	2	2	1	159	529
Pittsburgh.....	19	70	0	0	0	4	0	1	0	50	168
Reading.....	5	20	0	0	0	3	0	0	0	18	27
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	24	50	1	0	0	7	0	0	0	0	158
Cleveland.....	39	89	0	0	0	25	1	0	1	190	238
Columbus.....	10	4	1	8	0	6	0	5	0	26	66
Toledo.....	14	5	0	0	0	8	0	0	0	120	67
Indiana:											
Fort Wayne.....	4	4	3	0	0	0	0	0	0	6	21
Indianapolis.....	12	15	7	1	0	6	0	0	0	23	-----
South Bend.....	4	4	1	0	0	1	0	0	0	2	17
Terra Haute.....	1	4	1	0	0	0	0	0	0	2	20
Illinois:											
Chicago.....	126	221	2	0	0	39	1	0	0	124	656
Springfield.....	4	9	1	0	0	0	0	1	0	8	-----
Michigan:											
Detroit.....	116	220	0	0	0	19	0	0	0	176	228
Flint.....	13	12	1	0	0	1	0	0	0	18	26
Grand Rapids.....	12	3	-----	0	0	0	0	0	0	3	25
Wisconsin:											
Kenosha.....	3	3	0	0	0	0	0	0	0	15	3
Madison.....	2	0	0	0	-----	-----	0	0	-----	27	-----
Milwaukee.....	30	31	0	1	0	7	0	0	0	171	111
Racine.....	4	1	0	0	0	0	0	0	0	7	10
Superior.....	3	0	1	0	0	0	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	1	0	0	0	1	0	0	0	4	26
Minneapolis.....	84	60	2	0	0	5	0	0	0	17	82
St. Paul.....	28	24	1	0	0	2	0	0	0	16	65

## City reports for week ended April 18, 1932—Continued

Division, State, and city—	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CEN- TRAL—contd.											
Iowa:											
Davenport.....	1	4	2	0	—	—	0	0	—	0	—
Des Moines.....	9	13	3	3	—	—	0	0	—	0	35
Sioux City.....	2	3	1	4	—	—	0	0	—	2	—
Waterloo.....	1	0	0	1	—	—	0	0	—	3	—
Missouri:											
Kansas City....	22	16	1	0	0	6	0	0	0	44	97
St. Joseph.....	3	1	0	0	0	0	0	0	0	2	32
St. Louis.....	59	24	3	0	0	10	1	1	0	50	204
North Dakota:											
Fargo.....	2	3	0	0	0	1	0	0	0	0	11
Grand Forks....	0	0	0	0	—	—	0	0	—	0	—
South Dakota:											
Aberdeen.....	1	0	0	0	—	—	0	0	—	4	—
Sioux Falls.....	1	0	0	0	—	—	0	0	—	0	—
Nebraska:											
Omaha.....	4	9	5	2	0	1	0	0	0	3	58
Kansas:											
Topeka.....	3	0	1	0	0	0	0	0	0	29	9
Wichita.....	2	0	1	0	0	0	0	0	0	1	26
SOUTH ATLANTIC											
Delaware:											
Wilmington....	6	13	0	0	0	1	0	0	0	9	27
Maryland:											
Baltimore.....	40	82	0	0	0	20	1	1	1	127	240
Cumberland.....	0	0	0	0	0	0	0	0	0	0	7
Frederick.....	1	0	0	0	0	1	0	0	0	3	2
District of Col.:											
Washington.....	25	21	0	0	0	10	0	0	0	23	157
Virginia:											
Lynchburg.....	0	0	0	0	0	0	0	0	0	20	17
Norfolk.....	1	4	0	0	0	1	0	0	0	14	34
Richmond.....	4	12	0	0	0	5	0	0	0	3	56
Roanoke.....	2	4	0	0	0	0	0	0	0	1	19
West Virginia:											
Charleston.....	0	2	1	0	0	0	0	0	0	2	20
Huntington.....	—	2	—	0	—	—	—	0	—	0	—
Wheeling.....	1	2	0	0	0	0	1	0	0	21	8
North Carolina:											
Raleigh.....	0	0	0	0	0	0	0	0	0	2	6
Wilmington.....	0	1	0	0	0	0	0	0	0	14	5
Winston-Salem...	0	16	1	0	0	1	0	0	0	28	12
South Carolina:											
Charleston.....	1	1	0	0	0	2	0	1	0	0	25
Columbia.....	0	0	0	0	0	1	1	0	0	11	26
Greenville.....	0	0	1	0	—	—	0	0	—	0	—
Georgia:											
Atlanta.....	6	2	2	0	0	5	0	0	0	4	61
Brunswick.....	0	0	0	0	0	0	0	2	1	0	3
Savannah.....	0	2	0	0	0	1	0	2	0	4	28
Florida:											
Miami.....	0	0	0	0	0	0	1	0	0	3	26
Tampa.....	1	0	0	0	0	0	1	0	0	0	23
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	0	1	0	0	0	0	0	0	0	24
Lexington.....	—	1	—	5	0	2	—	0	0	4	12
Tennessee:											
Memphis.....	11	3	2	0	0	5	1	5	0	16	86
Nashville.....	2	1	0	0	0	5	0	0	0	8	38
Alabama:											
Birmingham....	2	2	0	0	0	5	0	1	0	18	60
Mobile.....	0	1	0	8	0	3	1	0	0	0	26
Montgomery....	0	0	0	—	—	—	0	0	—	0	—

## City reports for week ended April 16, 1932—Continued

Division, State and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	1	0	0			0	0		0	
Little Rock.....	2	0	0	0	0	0	0	0	0	1	2
Louisiana:											
New Orleans.....	11	4	0	1	0	0	2	1	0	2	
Shreveport.....	0	1	0	0	0	1	0	0	0	4	38
Oklahoma:											
Muskogee.....		0		1				1		0	
Oklahoma City.....	4	6	3	4	0	2	1	0	1	0	59
Texas:											
Dallas.....	4	5	2	0	0	3	1	0	0	3	53
Fort Worth.....	2	5	4	2	0	4	0	0	0	0	46
Galveston.....	0	1	0	0	0	2	0	1	0	0	13
Houston.....	3	5	3	0	0	6	0	1	0	0	71
San Antonio.....	1	0	0	1	0	10	0	0	1	0	74
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	7
Great Falls.....	1	0	0	0	0	1	0	1	0	0	6
Helena.....	0	0	1	0	0	0	0	0	0	0	3
Missoula.....	1	1	0	0	0	0	0	0	0	0	2
Idaho:											
Boise.....	0	0	0	2	0	0	0	0	0	0	7
Colorado:											
Denver.....	13	21	0	0	0	9	0	0	0	31	68
Pueblo.....	2	0	0	0	0	1	0	0	0	4	9
New Mexico:											
Albuquerque.....	0	7	0	0	0	2	0	0	0	0	8
Arizona:											
Phoenix.....	1	1	0	0	0	5	0	0	0	0	
Utah:											
Salt Lake City.....	2	2	0	0	0	2	0	0	0	2	30
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle.....	8	8	2	0			1	0		7	
Spokane.....	6	1	8	0			0	0		5	
Tacoma.....	2	2	4	5	0	0	0	0	0	3	27
Oregon:											
Portland.....	4	4	9	18	0	2	0	1	0	5	58
Salem.....	0	0	1	0	0	0	0	0	0	13	
California:											
Los Angeles.....	34	57	5	0	0	27	1	2	0	65	268
Sacramento.....	2	2	0	0	0	5	0	0	0	8	33
San Francisco.....	21	8	1	9	0	9	1	1	1	16	151

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston	2	0	0	0	0	0	0	1	0
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo	1	3	0	0	0	0	0	0	0
New York	6	6	1	1	0	0	1	0	0



## City reports for week ended April 16, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Polio-myelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
MIDDLE ATLANTIC—continued									
New Jersey:									
Newark.....	1	0	2	0	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	4	2	0	0	0	0	0	0	0
Pittsburgh.....	1	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	0	1	0	0	0	0	0	0	0
Cleveland.....	2	2	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	5	1	0	0	0	0	0	0	0
Terre Haute.....	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	7	2	3	2	0	0	0	0	0
Michigan:									
Detroit.....	3	0	1	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	0	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis.....	1	1	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	1	0	1	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	1	0	0	1	0	0	0	0	0
District of Columbia:									
Washington.....	1	1	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta.....	2	0	0	0	0	0	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	0	1	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	0	0	0	0
Mobile.....	0	0	0	0	1	0	0	0	0
Montgomery.....	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
Shreveport.....	0	0	0	0	0	1	0	0	0
Oklahoma:									
Muskogee.....	0	0	1	0	0	0	0	0	0
Oklahoma City.....	0	2	0	1	0	0	0	0	0
Texas: <sup>1</sup>									
Dallas.....	0	0	0	0	2	2	0	0	0
Fort Worth.....	0	0	0	0	0	2	0	0	0
San Antonio.....	1	0	0	0	0	0	0	1	0
MOUNTAIN									
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
PACIFIC									
California:									
Los Angeles.....	0	0	0	0	0	0	0	3	0
San Francisco.....	0	0	0	0	1	1	0	0	0

<sup>1</sup> Typhus fever, 3 cases: 1 case at Savannah, Ga., and 2 cases at Houston, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 16, 1932, compared with those for a like period ended April 18, 1931. The population figures used in computing the rates are estimated

mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, March 13 to April 16, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*

## DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931
98 cities.....	62	65	52	78	47	53	51	65	54	66
New England.....	65	67	65	70	38	46	62	84	29	79
Middle Atlantic.....	64	64	56	63	44	45	53	59	49	62
East North Central.....	48	72	31	82	29	64	46	86	44	83
West North Central.....	95	73	65	163	78	42	27	63	49	63
South Atlantic.....	49	73	60	61	37	47	37	49	49	65
East South Central.....	12	23	6	70	6	20	40	18	17	23
West South Central.....	162	71	112	64	158	85	92	54	119	74
Mountain.....	43	17	9	87	17	44	52	35	60	17
Pacific.....	89	51	70	69	57	53	70	57	110	43

## MEASLES CASE RATES

98 cities.....	732	1,041	727	1,208	846	1,122	860	1,327	982	1,316
New England.....	860	1,527	599	1,479	777	1,106	697	1,503	765	1,349
Middle Atlantic.....	578	1,158	598	1,321	621	1,250	560	1,422	554	1,544
East North Central.....	1,167	568	1,268	722	1,678	726	1,688	630	2,160	789
West North Central.....	316	492	186	651	398	532	388	704	724	580
South Atlantic.....	302	3,448	232	3,885	245	3,814	343	4,654	298	4,350
East South Central.....	23	1,004	19	1,650	6	1,815	23	1,708	0	1,627
West South Central.....	40	51	158	47	208	88	49	68	30	102
Mountain.....	398	1,288	603	1,140	664	661	1,008	844	1,336	922
Pacific.....	1,443	394	1,449	519	1,262	359	1,312	500	952	417

## SCARLET FEVER CASE RATES

98 cities.....	488	389	478	403	413	371	423	362	477	383
New England.....	724	676	731	697	683	577	774	474	796	584
Middle Atlantic.....	786	302	755	454	632	404	625	413	744	415
East North Central.....	394	395	397	378	345	377	360	337	399	382
West North Central.....	195	589	197	580	205	585	226	538	287	518
South Atlantic.....	371	487	382	311	345	291	318	356	310	307
East South Central.....	110	342	100	564	92	399	87	470	40	587
West South Central.....	89	102	40	78	46	95	53	105	56	112
Mountain.....	215	305	233	209	129	157	250	174	207	278
Pacific.....	147	110	133	104	122	92	145	104	148	116

## SMALLPOX CASE RATES

98 cities.....	5	22	14	17	4	14	6	19	7	22
New England.....	0	0	0	0	2	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	1	0	3
East North Central.....	4	8	2	7	4	9	4	6	6	19
West North Central.....	17	130	17	99	2	78	9	96	13	92
South Atlantic.....	0	0	0	4	0	2	8	18	0	10
East South Central.....	12	12	38	12	35	12	52	0	46	63
West South Central.....	13	95	0	78	3	71	10	81	7	95
Mountain.....	17	9	0	44	26	0	9	17	17	9
Pacific.....	11	43	15	22	13	16	23	53	27	27

See footnotes at end of table.

*Summary of weekly reports from cities, March 13 to April 16, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 19, 1932	Mar. 21, 1931	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931
98 cities.....	4	4	15	4	5	4	3	5	5	5
New England.....	2	2	5	2	0	2	2	2	0	2
Middle Atlantic.....	1	2	3	2	3	3	1	5	2	4
East North Central.....	2	2	3	2	4	2	2	3	4	2
West North Central.....	2	8	4	2	2	4	0	0	2	4
South Atlantic.....	2	16	12	12	8	14	16	16	12	8
East South Central.....	29	0	19	0	6	0	23	6	35	12
West South Central.....	23	10	20	7	13	10	0	3	10	7
Mountain.....	17	0	9	0	0	9	0	0	9	9
Pacific.....	2	8	6	10	17	2	6	8	6	10

## INFLUENZA DEATH RATES

91 cities.....	37	32	36	29	29	23	25	18	20	17
New England.....	10	19	17	14	17	2	5	19	7	7
Middle Atlantic.....	39	23	36	20	34	17	23	12	23	12
East North Central.....	40	28	41	25	24	18	22	14	20	10
West North Central.....	32	47	23	35	17	12	23	15	20	29
South Atlantic.....	49	49	36	32	39	40	61	30	29	32
East South Central.....	50	115	44	127	56	127	75	70	38	76
West South Central.....	61	35	94	55	40	69	40	45	20	45
Mountain.....	43	35	43	61	69	26	34	17	9	17
Pacific.....	12	34	5	41	2	14	0	19	5	10

## PNEUMONIA DEATH RATES

91 cities.....	188	184	193	180	167	171	151	155	124	161
New England.....	156	183	225	156	165	127	192	173	129	144
Middle Atlantic.....	238	216	243	220	203	223	186	168	162	180
East North Central.....	133	132	119	125	113	120	79	118	74	127
West North Central.....	192	215	239	178	204	150	189	253	143	245
South Atlantic.....	233	269	272	263	235	222	204	200	167	188
East South Central.....	201	210	201	191	194	172	201	178	194	293
West South Central.....	205	180	199	211	172	238	205	169	91	173
Mountain.....	233	122	138	131	121	157	129	191	86	113
Pacific.....	98	101	72	98	88	53	72	60	56	67

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Columbia, S. C., and Montgomery, Ala., not included.

<sup>3</sup> Columbia, S. C., not included.

<sup>4</sup> Montgomery, Ala., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended April 9, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended April 9, 1932, as follows:

	Cerebro-spinal fever	Influenza	Typhoid fever
Prince Edward Island <sup>1</sup> .....			
Nova Scotia.....		27	
New Brunswick.....			1
Quebec.....			12
Ontario.....	1	264	5
Manitoba <sup>1</sup> .....			
Saskatchewan <sup>1</sup> .....			
Alberta.....			1
British Columbia.....			1
Total.....	1	291	20

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Ontario Province — Communicable diseases — Comparative — Four weeks ended March 26, 1932.*—The Department of Health of the Province of Ontario, Canada, reports cases of certain communicable diseases for the four weeks ended March 26, 1932, and the corresponding period of 1931, as follows:

Disease	Four weeks 1932		Four weeks 1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	5	8	5	
Chancroid.....	1		1	
Chicken pox.....	794		972	
Conjunctivitis.....	36			
Diphtheria.....	116	8	180	5
Erysipelas.....	10	4		
German measles.....	35		67	
Gonorrhoea.....	127		145	
Influenza.....	1,518	44	105	35
Jaundice.....	7			
Lethargic encephalitis.....	4	1		2
Measles.....	3,375		258	
Mumps.....	797		721	
Paratyphoid fever.....	1		11	
Pneumonia.....		206		275
Polio-myelitis.....	1		1	
Puerperal septicemia.....	1	2		1
Scarlet fever.....	426	3	766	2
Septic sore throat.....	8	1	11	
Smallpox.....	2		16	
Syphilis.....	121	1	153	1
Tuberculosis.....	152	47	135	72
Typhoid fever.....	4		21	3
Undulant fever.....	1		10	
Whooping cough.....	465	2	316	5

*Quebec Province—Communicable diseases—Week ended April 9, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended April 9, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	62	Scarlet fever.....	81
Diphtheria.....	20	Tuberculosis.....	50
Erysipelas.....	4	Typhoid fever.....	12
German measles.....	15	Whooping cough.....	24
Measles.....	250		

### DENMARK

*Communicable diseases—January, 1932.*—During the month of January, 1932, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Mumps.....	268
Chicken pox.....	76	Paratyphoid fever.....	14
Diphtheria and croup.....	306	Poliomyelitis.....	14
Erysipelas.....	256	Puerperal fever.....	8
German measles.....	3	Scabies.....	1,000
Gonorrhea.....	956	Scarlet fever.....	228
Influenza.....	10,174	Typhoid fever.....	2
Lethargic encephalitis.....	6	Undulant fever (Bact. abort. Bang).....	40
Measles.....	2,902	Whooping cough.....	2,071

### UNION OF SOUTH AFRICA

*Johannesburg—Vital statistics—Year ended June 30, 1931.*—During the year ended June 30, 1931, births and deaths were reported in the several population groups, whites, natives, Eurafrians, and Asiatics, in Johannesburg, Union of South Africa, as follows:

	Whites	Natives	Eurafri- cans	Asiatics
Number of births.....	4,906	12,024		
Birth rate per 1,000 population.....	24.6			
Number of deaths.....	2,028	2,349	357	181
Death rate per 1,000 population.....	10.2	22.8	17.9	22.6
Deaths under 1 year per 1,000 births.....	79.1		206.3	121.2

<sup>1</sup> This number includes native and colored births.

NOTE.—The population of Johannesburg, estimated as of June 30, 1931, was as follows: Whites, 199,203; natives, 150,000; Eurafrians, 20,000; Asiatics, 8,000.

Deaths from certain causes reported in Johannesburg during the year ended June 30, 1931, together with death rates per 1,000 population, are shown in the following table:

Cause of death	Number of deaths				Death rate per 1,000 pop			
	Whites	Natives	Eurafricans	Asiatics	Whites	Natives	Eurafricans	Asiatics
Bronchitis, acute.....	25	108	13	4	0.12	0.72	0.65	0.60
Bronchitis, chronic.....	49	13	7	7	.24	.08	.35	.85
Cancer.....	159	23	7	2	.79	.15	.35	.25
Cerebral hemorrhage and softening.....	48	21	5	3	.24	.14	.25	.37
Congenital malformation, premature and early infancy.....	145	219	37	11	.72	1.46	1.85	1.37
Diarrhea and enteritis.....	157	615	62	81	.78	4.10	3.10	3.87
Diphtheria and croup.....	6	5			.03	.03		
Heart disease.....	323	110	26	23	1.62	.73	1.30	2.85
Influenza.....	32	9	1	1	.16	.06	.05	.12
Measles.....	5	1		1	.02	.006		.12
Meningitis.....	32	63	4	1	.16	.42	.20	.12
Nephritis (acute) and Bright's disease.....	95	40	13	8	.47	.32	.65	1.00
Pneumonia.....	278	1,057	91	46	1.39	7.03	4.55	5.75
Scarlet fever.....	2				.01			
Silicosis.....	45	6			.22	.04		
Tuberculosis, pulmonary.....	69	210	23	8	.34	1.40	1.15	1.00
Tuberculosis, other forms.....	6	51	4		.03	.34	.20	
Other respiratory diseases.....	44	37	2	1	.22	.23	.10	.12
Typhoid fever.....	20	120	8	3	.10	.86	.40	.37
Violence.....	131	327	21	9	.65	2.18	1.05	1.12
Whooping cough.....	2	12	3		.01	.08	.15	

## YUGOSLAVIA

*Communicable diseases—January, 1932.*—During the month of January, 1932, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	30	5	Paratyphoid fever.....	11	1
Cerebrospinal meningitis.....	7	3	Scarlet fever.....	424	51
Diphtheria and croup.....	683	91	Sepsis.....	19	9
Dysentery.....	22		Tetanus.....	10	0
Erysipelas.....	179	14	Typhoid fever.....	175	28
Leprosy.....	1		Typhus fever.....	11	
Measles.....	567	9			











## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Week ended—													April, 1932		
	January, 1932			February, 1932					March, 1932							
	16	23	30	6	13	20	27	5	12	19	26					
India	2,550	2,493	4,235	6,998	1,731	2,122	1,956	2,083	2,263	2,033	2,187	2,080				
Bassett	1,147	1,170	1,739	2,912	840	1,047	1,005	1,079	1,343	1,230	1,248	1,149				
Bombay	1	1	1				1		1	1	1	1	1	3	3	3
Bombay	1	1	1						1	1	1	2	2	1	2	2
Plague-infected rats	42	22	56	42	8	18	14	17	21	27	30	31	31	26	17	43
Madras Presidency	185	91	57	169	87	99	87	22	66	66		10	5	27	27	30
Moulmein	105	40	24	59	58	44	35	14	42					18		
Rangoon	2															
Indo-China (see table below)	5	1	1	1	1	2	2		1	4	3	1	1	2	1	1
Indo-China (see table below)	4	1	2	1						4	3	1	1	1	1	4
Indo-China (see table below)											1	1	1	1	1	3
Bagdad		2	7	2	2	1	1	1	1	1		1				
Mandhan		2	2													
Mandhan		3	2													
Madagascar (see also table below): Tamatave		1	1													
Morocco	1			1												
Morocco	18	2	11													
Morocco	8	6														
Peru (see table below)																
Senegal (see table below)																
Siam																
Spain: Hospitalet—Barcelona Province	4	5	5	1	1							1	4	1	1	
Spain: Hospitalet—Barcelona Province	3	2	2	1	1								2			
Syria: Beirut	2	7														
Tunisia: Tunis	1	1														
Tunisia: Tunis	3	1													1	
Union of South Africa: Orange Free State	1															
Union of South Africa: Orange Free State	P		P	P	P	P	P	2				P				















Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	December, 1931			January, 1932			February, 1932			March, 1932		
				1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-29	1-10	11-20	
Gold Coast.....															
Indo-China (see also table above).....	39	47	120	144	41	324	11	107	191	145	205	309	230	276	
Ivory Coast.....	13	16	22	17	21	55	11	52	85	47	98	86	109	113	
Syria: Beirut.....			1				2	3							

Place	Week ended—														
	Sept. 20-27, 1931			Oct. 18-25, 1931			Nov. 15-22, 1931			Dec. 13-20, 1931			January, 1932		
	17, 1931			14, 1931			12, 1931			9, 1932			February, 1932		
													16		
Algeria:															
Algiers.....	1	2		4	1										
Constantine Department.....	1	38	3	5	2										
Geryville.....					5										
Oran.....					2										
Bulgaria:															
.....	1	1	1	22	16	12	13	3	1	29	36				
.....	2	2	4	3	3	2	3	1		3	3				
Chile:															
Antofagasta.....		1		1											
Santiago.....		34	3												
China:															
Hankow.....															
Shanghai.....				4											
Swatow.....	1														
Chosen (see table below).....															
Colombia: Cali.....															
Ocechniornakis (see table below).....															

1 A suspected case.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	Sept. 20- Oct. 17, 1931	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec. 13- 1931- Jan. 9, 1932	Week ended—											
					January, 1932				February, 1932				March, 1932			
					16	23	30	6	13	20	27	5	12	19	26	April, 1932
Egypt:																
Alexandria.....	C			5					1	63	7					
Beheira.....	C	1	1	7												46
Cairo.....	C															
Gharbieh.....	C	1							12							
Provinces.....	C			11	4		13	26	26	11	104	192	148	164		
	D			2			2	1	1	2	5	17	15	17		
Greece (see table below).																
Irish Free State:																
Donnegal County—Stranorlar	C		2													
Limerick County—																
Croom.....	C	1														
Glin.....	C	1														
Limerick.....	C		1													
Rathkeale.....	C															
Waterford County—Lismore	C	1		1												
Latvia (see table below)																
Lithuania (see table below).																
Mexico:																
Quetzalajara.....	D	14	16	1												
Mexico City, including municipalities in Federal District.	D	8	4	6	11	5	10	4	6	7	8	3	2	2	3	
	D	6	4	1	1	1	4	2	2	1	4	3	2	2	1	
San Luis Potosi.....	D	2	2													
Torreón.....	D	4	1	11												
Morocco.....	D	4	1	2	9	2	1	3	7	19	19	14	3	21	5	9
	D	6	3	1	4	1	1	1	1	1	1	6	2	4	1	
Pakistan.....	D															
Paraguay: Asuncion.....	D															
Peru.....	D															
Poland.....	D	14	20	108	103	69	61	74	61	49	41	58	67	74	65	64
	D	1	3	10	14	4	2	4	2	3	3	7	9	5	4	5

Portugal: Oporto.....	C	18	3	68	108	62	63	68	1	70	74	94					10
Romania.....	C	3	3	8	10	3	1	8		1	6	11					
Tunisia: Tunis.....	D			2	2					1	14	2					37
Turkey (see table below).	D										26	3					4
Union of South Africa.....																	
Cape Province.....																	
Natal.....	C	P	P	P	P	P	P		P	P	P	P					
Municipality of East London.....	C	P															
Orange Free State.....	C	P															
Transvaal.....	C	P	P	P	P	P	P		P	P	P	P					
Venezuela: Caracas (see table below).	C	1	P														
Yugoslavia (see table below).																	
On vessel: At Antofagasta, from Iquique and points north.....	C				1												

Place	October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932	Place	October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932
Chosen: Seoul.....	24	4			5		Lithuania.....	5	9			10	32
Czechoslovakia.....	18	1		1	1		Turkey.....	11	14	21	14	3	2
Greece.....	12	4	3	4	4		Venezuela: Caracas.....	2	2	1	3	2	2
Latvia.....			1				Yugoslavia.....			1	2		5
			12								11	26	1

<sup>1</sup> Typhus fever was reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease did not spread to the coastal regions.







UNITED STATES TREASURY DEPARTMENT

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===== SPECIAL ARTICLE =====

Mortality from Certain Causes in Several States, 1931



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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# PUBLIC HEALTH REPORTS

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## MORTALITY IN CERTAIN STATES DURING 1931, WITH COMPARATIVE FIGURES FOR RECENT YEARS <sup>1</sup>

For several years the United States Public Health Service has secured from State health departments current mortality data and has published from time to time death rates from certain important causes from as many States as could furnish the information. The monthly data so collected are, of course, available for an annual summary also, and the tables here presented have been compiled to give a preliminary summary of mortality during 1931.

The rates are computed from current and generally preliminary reports furnished by State departments of health. Because of (a) some lack of uniformity in the method of classifying deaths according to cause, (b) some delayed death certificates, and (c) various other reasons, these preliminary rates can not be expected to agree in all instances with final rates published by the Bureau of the Census; the final figures are based on a complete review and retabulation of the individual death certificates from each State. The preliminary rates given in the accompanying tables are intended to serve as a current index of mortality until final figures are issued by the Bureau of the Census.

For purposes of comparison, the mortality rates for a few preceding years are given. These comparative rates for preceding years are taken from the same source as are the current reports. Although final figures are often available for these earlier years, the preliminary figures are retained as being more nearly comparable with current preliminary rates. Populations used throughout are estimates as of July 1 of each year based on the 1930 and 1920 censuses.

In Table 1 the death rates from all causes and from certain specific causes for groups of States have been brought together. The number of States included varies with the cause; but for a given cause the same States are included for each of the years from 1923 to 1931. Tables 2, 3, 4, and 5 show the States that are included in the summary for each disease presented in Table 1 and also the death rates from that cause in each of the States for each year. The death rates for

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<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service.

the groups are repeated in those tables, but it seemed worth while to bring together in Table 1 the rates for the different causes and years in as large a group of States as possible. In every case all States for which data were available for the whole period 1923-1931 were used in making the summary. In addition, the detailed tables (Tables 2, 3, 4, and 5) show rates for 1931 and such other years as could be secured from States for which data were not available for the whole period.

The rates for the majority of the diseases included in Table 1 are based on reports from 16 States, with an aggregate population of over 56,000,000, or about 45 per cent of the total population of the United States. Other causes in this table are based on fewer States, but the smallest population on which a rate is based is more than 34,000,000. While the rates in these States may not be the same as those for the total registration area, it is highly probable that the trend in these rates will be comparable with the trend in the rates in the total registration area.

The death rate per 1,000 for all causes in the group of 18 States was 10.9 in 1931, as compared with 11.3 in 1930 and 11.5 in 1927, the lowest rates for the preceding years included in the study. Considering individual States, out of the total of 25 States with data for both 1930 and 1931, only 2 States failed to show a decline, and in one of these the rate was the same for the two years.

In 16 States for which infant mortality figures were available, the infant death rate per 1,000 live births was 62 in 1931, as compared with 63 in 1930, and with 66 in 1927, the preceding low years. The 1931 figure is the lowest of any of the years included in this report. Of 22 States with data for both 1930 and 1931, 12 showed a decrease, 7 an increase, and in 3 States the rate was the same for the two years. Inasmuch as the death rate from malformations and diseases of early infancy changes very little from year to year, a line has been inserted in Table 1 to show the infant mortality from all causes except malformations and diseases of early infancy. Infant mortality from causes other than malformation and diseases of early infancy has declined 29 per cent since the year 1923, as against a decrease of 22 per cent for the same period in the infant mortality from all causes. Nearly one-half of the present infant mortality is due to malformations and diseases of early infancy, and this group of causes has decreased very little.

In the 7 States for which maternal mortality figures are available throughout the period 1923-1931, the death rate of mothers per 1,000 live births was 5.6 in 1931, as compared with 5.8 in 1930 and 6.2 in 1929. Of 22 States with data for both 1930 and 1931, 12 showed a decrease, 9 an increase, and 1 remained the same for the two years.

The typhoid fever death rate in the group of 16 States of 3.1 per 100,000 in 1931 represents a decrease from 3.5 in 1930, but is the same as in 1929. It is, however, less than in any year preceding 1929. Of 27 States with data for both 1930 and 1931, only 8 showed an increase, the other 19 all showing a decrease. Of 25 States with data available for 1931 and 1929, 11 increased, 1 remained the same in the two years, and 13 showed a decrease from 1929.

The rather sharp decline of diarrhea and enteritis under 2 years of age continued, the rate in 1931 being 13.7 per 100,000 total population, as compared with 17.9 in 1930 and 16.7 in 1929. The rate in 1931 was less than half of the rate in 1923. Of 25 States with data available for both 1930 and 1931, only 1 showed an increase, while 1 remained the same in the two years, and the other 23 States declined. Of 23 States with data for 1931 and 1929, 18 decreased in 1931 from the 1929 rate and 5 increased.

It is common knowledge that the diseases of children, such as measles, whooping cough, scarlet fever, and diphtheria, tend to occur in cycles, and therefore the death rate for any one year is a poor indicator of the average mortality from these diseases. The measles mortality in 1931 was slightly less than in 1930, but slightly greater than in 1929. Of 27 States with data for the last two years, 17 showed decreases and 10 increases in 1931 as compared with the preceding year. The death rate from whooping cough in 1931 was less than in any year included in the table. Of the 27 States with data for the past two years, 16 had a lower rate, 10 a higher rate in 1931 than in the preceding year, and the rate for one State was the same for both years. The death rate from scarlet fever was more than in 1930, but less than in 1929. Of the 27 States with data for the past two years, 13 showed an increase and 14 a decrease as compared with 1930. Diphtheria continued its almost uninterrupted decline, the rate of 3.7 in 1931 being only 30 per cent of the rate in 1923. However, of 27 States with data for 1930 and 1931, only 12 decreased, while 13 increased and 2 remained the same in the two years.

The death rate for poliomyelitis in the group of 11 States with complete data back to 1923 was the same in 1931 as in 1930, 1.4 per 100,000. This group of 11 States, however, does not include New York City or New Jersey, and the former was the center of the 1931 poliomyelitis epidemic. The death rate in New York City was 7.1 per 100,000 in 1931, as compared with 0.2 in 1930. In a group of 27 States with data for both years, the poliomyelitis death rate was 1.8 in 1931, as compared with 1.1 in 1930. Of these 27 States, 15 showed an increase, 11 a decrease, and 1 remained the same in 1931 as in 1930. Many of the western States had higher rates in 1930 than in 1931.

The meningococcus meningitis death rate in 1931 was less than in 1930 and 1929, but was higher than in any of the other years included.

The year 1929 marks the peak of a gradual rise in the death rate for this disease. Of 27 States with data available for both years, 20 decreased, 5 increased, and 2 remained the same in 1931 as in 1930.

The death rate for influenza in 1931 was 24.9 as compared with 19.0 for 1930. There was a very minor influenza epidemic in the early months of 1931, the cases apparently being very mild, since the death rate was only slightly in excess of the expected rate for that season of the year. The year 1930 was exceptionally free from influenza, and the rate for 1931 is low as compared with the rate of 54.2 for 1929, when a more severe epidemic occurred. The increased influenza death rate of 1931 was quite general; 24 of the 27 States with data for both years showed an increase in 1931 over 1930. The pneumonia death rate decreased slightly in 1931, the rate being 79.7 as compared with 82.7 in 1930. Of the 23 States with data for both years, 14 showed a decrease and 9 an increase in 1931. If influenza and pneumonia are added and considered together, the combined rate for 1931 (104.2) was slightly in excess of the rate for 1930 (101.7).

The death rate for tuberculosis continued an uninterrupted decline, the rate being 66.3 in 1931 as against 70.3 for the preceding year, and both of these rates are lower than those for any other years included. Since 1923 the rate has been reduced by more than 30 per cent. Of 27 States with data for 1930 and 1931, 23 showed a decrease and only 4 an increase in 1931 as compared with 1930.

The diabetes death rate in 1931 was higher than in any preceding year included. Although the trend appears to be upward, the increases have not been large, the rate for 1931 being 21.5 as compared with 20.4 in 1930. Of 24 States with data available for both years, 16 showed an increase, 7 showed a decrease, and 1 remained the same in 1931 as in 1930.

The death rate for cancer was practically the same in 1931 as in 1930. Since 1923 the rate has increased 12 per cent. Of 25 States with data available for both years, 15 showed an increase and 10 showed a decrease in 1931 as compared with 1930.

The death rate for diseases of the heart was practically the same in 1931 as in 1930, 226 per 100,000. Of 27 States with data for both years, 13 showed an increase, 12 a decrease, and in 2 States the rate was the same in 1931 as in 1930.

The death rate for nephritis was less in 1931 than in any preceding year included. Of 24 States with data available for the past two years, 19 showed a decrease and only 5 an increase in 1931 as compared with 1930. During the period 1923-1931 the nephritis death rates fluctuated considerably, but the 1931 rate is 2 per cent below that of 1924, the preceding low mark, and nearly 11 per cent below the high rate of 1926.

The death rate from cerebral hemorrhage, apoplexy, was less in 1931 than in any of the other years included. The decline, however, has been small. Of 21 States with data available for the last two years, 13 showed a decrease and 8 an increase in 1931 as compared with 1930.

TABLE 1.—Summary of mortality from all causes in a group of States, 1923-1931

Diseases (numbers in parentheses are from the International List of Causes of Death, fourth revision, 1929)	1931	1930	1929	1928	1927	1926	1925	1924	1923	Number of States included <sup>1</sup>	Estimated population as of July 1, 1931 (in thousands)
Death rate per 1,000 population											
All causes.....	10.9	11.3	12.0	12.1	11.5	12.4	12.0	11.9	12.5	18	63,321
Deaths under 1 year per 1,000 live births											
Total infant mortality.....	62	63	67	69	66	74	74	72	79	16	58,458
All except malformations and early infancy.....	32	34	36	37	34	40	41	42	45	8	29,961
Deaths of mothers per 1,000 live births											
Maternal mortality.....	6.1	5.8	6.2	6.4	6.4	6.6	6.7	6.5	7.1	7	34,837
Death rate per 100,000 population											
Typhoid fever (1, 2) ..	3.1	3.5	3.1	3.6	4.5	5.9	7.3	6.0	6.2	16	56,443
Measles (7).....	2.8	3.0	2.5	4.0	3.2	8.2	2.4	6.1	11.7	16	56,443
Scarlet fever (8).....	2.0	1.7	2.1	1.8	2.0	2.3	2.7	3.2	3.9	16	56,443
Whooping cough (9).....	3.4	4.1	5.9	5.1	6.1	8.8	6.8	7.9	9.4	16	56,443
Diphtheria (10).....	3.7	4.2	5.6	6.6	7.2	7.1	7.6	9.2	12.3	16	56,443
Influenza (11).....	24.9	19.0	54.2	43.0	22.6	41.0	29.4	19.4	42.5	16	56,443
Acute anterior poliomyelitis (16).....	1.4	1.4	.7	1.2	1.8	.8	1.6	.9	.8	11	42,586
Meningococcus meningitis (18).....	2.0	2.5	3.0	1.6	1.1	1.1	1.0	.9	1.2	12	45,297
Tuberculosis, all forms (23-32).....	66.3	70.3	75.4	79.5	80.6	87.8	88.0	91.5	95.2	17	58,337
Cancer (45-53).....	102.1	102.0	101.1	101.0	98.4	97.5	94.9	92.4	92.4	17	58,337
Diabetes mellitus (59).....	21.5	20.4	19.9	20.3	18.3	18.6	17.1	16.7	17.9	10	39,157
Cerebral hemorrhage, apoplexy (82, a, b).....	91.5	93.3	96.7	98.6	93.7	96.2	98.5	101.3	100.0	9	34,033
Heart diseases (90-95).....	225.5	226.4	231.1	228.8	211.3	211.8	196.4	185.7	181.2	11	42,435
Pneumonia, all forms (107-109).....	79.3	82.7	93.6	98.5	79.5	102.3	99.0	101.7	114.5	16	55,901
Diarrhea and enteritis under 2 years (119).....	13.7	17.9	16.7	18.4	19.5	25.5	31.7	27.8	33.2	15	84,007
Nephritis, all forms (130-132).....	92.2	98.1	97.9	101.8	98.4	103.5	96.5	94.2	95.0	12	46,590

<sup>1</sup> See Tables 2, 3, 4, and 5 for names of States included. The District of Columbia is counted as a State in this column.



TABLE 2.—Mortality from all causes in certain States and in a group of insured wage earners, 1923-1931

State	Death rate per 1,000 population (all causes)								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
States with complete data (17 States and District of Columbia), total.....	10.9	11.3	12.0	12.1	11.5	12.4	12.0	11.9	12.5
Alabama.....	10.6	11.5	12.4	12.0	10.3	11.7	11.6	11.5	11.0
California.....	11.3	11.6	11.9	12.6	12.1	12.1	12.2	12.9	13.0
Connecticut.....	10.3	10.5	11.3	11.3	10.8	12.0	11.8	11.5	12.2
District of Columbia.....	15.8	15.2	15.4	15.1	14.8	15.8	15.1	14.3	15.6
Indiana.....	11.3	11.6	12.2	12.2	11.5	12.9	12.5	12.1	12.8
Kansas.....	10.0	10.4	10.4	11.2	10.0	10.4	10.2	9.8	10.9
Louisiana.....	10.0	11.8	11.8	12.2	11.9	12.2	12.7	12.9	11.7
Maryland.....	13.2	13.2	13.5	13.6	13.3	14.0	14.2	13.7	14.7
Michigan.....	9.8	10.6	11.8	11.8	11.4	12.7	11.8	12.2	12.7
Minnesota.....	9.6	9.7	9.9	10.1	9.8	10.3	10.2	10.0	10.4
Nebraska.....	9.1	9.4	9.6	10.0	9.1	9.4	9.3	9.3	9.5
New Jersey.....	10.6	10.7	11.5	11.9	11.2	12.2	11.8	11.9	12.2
New York (exclusive of New York City).....	12.5	12.8	13.7	13.1	12.8	14.0	13.4	13.3	14.1
Ohio.....	11.1	11.4	12.5	12.4	11.5	12.5	11.8	11.4	12.4
Pennsylvania.....	11.5	11.6	12.3	12.6	11.9	13.0	12.6	12.4	13.4
Tennessee.....	10.7	11.4	12.2	12.2	11.4	12.5	11.2	11.4	11.8
Virginia.....	11.6	11.7	12.0	12.6	12.0	13.0	12.4	12.4	13.1
Wisconsin.....	10.1	10.3	10.7	10.5	10.3	10.0	10.3	10.1	10.6
Other States:									
Georgia.....	11.1	11.8	11.8	-----	-----	-----	-----	-----	-----
Hawaii.....	9.8	10.4	12.2	11.8	-----	-----	-----	-----	-----
Idaho.....	9.6	9.7	-----	-----	-----	-----	-----	-----	-----
Iowa.....	10.3	10.6	10.4	10.4	-----	-----	-----	-----	-----
Mississippi.....	9.9	10.8	11.6	-----	-----	-----	-----	-----	-----
Montana.....	9.7	9.8	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	10.2	11.4	11.9	11.7	-----	-----	-----	-----	-----
West Virginia.....	10.0	10.4	10.6	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	8.5	8.4	8.9	8.7	8.4	8.9	8.5	8.5	9.0

TABLE 3.—Infant mortality in certain States, 1923-1931

State	Deaths under 1 year per 1,000 live births								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
Total infant mortality									
States with complete data: (15 States and District of Columbia), total.....	62	63	67	69	66	74	74	72	79
Alabama.....	65	73	74	74	65	68	73	79	77
California.....	57	59	63	62	63	63	69	67	72
Connecticut.....	64	60	68	62	59	72	73	69	76
District of Columbia.....	71	70	69	65	66	65	57	76	91
Indiana.....	59	58	65	64	60	72	68	66	71
Louisiana.....	63	80	76	81	77	74	89	94	82
Maryland.....	80	76	79	79	81	87	90	87	94
Michigan.....	66	63	67	69	68	78	76	72	80
Minnesota.....	47	47	48	54	52	57	60	56	61
Nebraska.....	47	49	52	53	51	59	58	55	57
New Jersey.....	57	57	61	65	61	72	69	65	68
New York (exclusive of New York City).....	60	66	63	65	63	74	71	71	79
Ohio.....	59	58	68	66	62	76	69	67	74
Pennsylvania.....	65	65	71	72	69	82	82	78	90
Tennessee.....	70	71	75	78	72	79	74	78	76
Virginia.....	72	71	74	76	75	84	80	76	83
Other States:									
Georgia.....	69	78	-----	-----	-----	-----	-----	-----	-----
Hawaii.....	75	82	101	-----	-----	-----	-----	-----	-----
Idaho.....	59	61	-----	-----	-----	-----	-----	-----	-----
Iowa.....	51	56	52	54	-----	-----	-----	-----	-----
Kansas.....	48	52	57	59	-----	-----	-----	-----	-----
Montana.....	56	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	73	77	-----	-----	-----	-----	-----	-----	-----
Wisconsin.....	53	56	61	61	-----	-----	-----	-----	-----

TABLE 3.—*Infant mortality in certain States, 1923-1931—Continued*

	Deaths under 1 year per 1,000 live births								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
	All except malformations and early infancy								
States with complete data (7 States and District of Columbia), total.....	32	34	36	37	34	40	41	42	45
Alabama.....	40	45	46	48	35	40	41	44	38
California.....	26	29	32	33	31	31	35	35	39
District of Columbia.....	35	36	34	28	27	42	43	35	45
Louisiana.....	40	49	48	50	46	45	54	55	51
Maryland.....	45	38	46	42	43	49	48	46	54
Nebraska.....	19	19	23	21	21	25	25	23	27
New York (exclusive of New York City)...	23	24	27	27	26	33	33	32	38
Pennsylvania.....	34	36	38	38	35	47	46	47	53
Other States.....									
Idaho.....	27	24							
Indiana.....	28	26							
Iowa.....	22	22	21	20					
Kansas.....	19	22	26	29					
Michigan.....	22	27	31						
Minnesota.....	17	17	18						
Ohio.....	26	25							
Tennessee.....	44	44	53						

TABLE 4.—*Maternal mortality in certain States, 1923-1931*

	1931	1930	1929	1928	1927	1926	1925	1924	1923
States with complete data (7 States), total.....	5.6	5.8	6.2	6.4	6.4	6.6	6.7	6.5	7.1
California.....	6.3	5.3	5.2	5.6	5.8	5.5	6.0	5.9	6.7
Nebraska.....	5.1	5.3	5.4	6.0	5.9	6.6	5.7	6.3	5.8
New York (exclusive of New York City)...	6.0	5.6	5.5	6.4	6.3	6.1	6.1	6.0	6.3
Ohio.....	6.0	5.5	6.6	6.2	6.2	6.8	6.6	6.3	7.1
Pennsylvania.....	6.0	5.7	6.2	5.8	6.1	6.1	6.2	6.1	6.3
Tennessee.....	6.8	7.9	8.1	8.2	6.8	6.8	7.8	7.5	8.1
Virginia.....	7.4	6.6	6.5	7.5	6.3	8.0	6.9	6.4	7.8
Other States.....									
Alabama.....	7.8	8.9	9.1	8.2	7.0				
District of Columbia.....	6.1	9.1	6.1						
Georgia.....	10.0	10.6							
Idaho.....	2.6	4.4							
Indiana.....	5.9	5.8	7.0	6.1	6.5				
Iowa.....	4.1	7.0	5.4	5.3					
Kansas.....	5.8	7.0	6.1	7.4					
Louisiana.....	8.9	9.8	10.3	11.1					
Maryland.....	6.0	5.3	5.6						
Michigan.....	5.9	5.9	6.1						
Minnesota.....	4.6	4.8	3.9						
Montana.....	7.0								
New Jersey.....	5.9	5.7	5.3						
North Carolina.....	7.8	7.6							
West Virginia.....	5.2	5.7	5.3						
Wisconsin.....	4.3	4.8							

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
TYPHOID FEVER (1, 2)									
States with complete data (15 States and District of Columbia), total	3.1	3.5	3.1	3.6	4.5	5.9	7.3	6.0	6.2
Alabama	7.0	7.9	7.5	9.4	12.4	15.1	16.8	14.2	14.7
California	1.6	1.7	1.7	2.0	2.1	2.4	2.5	5.2	3.6
Connecticut	1.0	.9	.9	.6	1.1	1.9	2.6	2.6	2.6
District of Columbia	3.9	3.3	2.7	3.1	2.1	2.6	5.4	4.1	5.9
Indiana	2.8	3.7	3.5	4.4	4.8	6.5	8.0	7.0	6.8
Louisiana	14.5	11.7	10.4	12.3	14.0	16.8	33.0	21.4	14.0
Maryland	5.4	6.4	4.3	5.3	5.9	7.7	7.4	6.4	6.6
Minnesota	.6	1.0	.9	.5	1.1	1.1	1.9	1.5	2.5
Nebraska	1.7	1.6	1.8	1.8	2.7	1.8	2.7	2.2	3.1
New Jersey	1.0	1.1	1.4	1.7	1.3	2.6	3.1	2.7	3.0
New York (exclusive of New York City)	1.1	1.6	1.6	2.0	2.1	2.4	3.8	3.5	3.4
Ohio	2.4	3.3	2.2	2.1	2.7	4.5	5.3	3.6	5.0
Pennsylvania	2.1	2.6	2.0	2.0	2.8	3.8	4.9	3.9	5.0
Tennessee	10.7	12.2	11.9	13.5	20.5	24.6	25.8	23.8	21.3
Virginia	7.3	5.8	4.4	6.1	7.3	11.2	12.8	8.7	10.8
Wisconsin	.7	.9	1.4	.8	1.4	1.5	2.0	1.0	2.2
Other States:									
Georgia	16.7	16.4	11.6	—	—	—	—	—	—
Hawaii	2.6	2.4	3.9	6.3	—	—	—	—	—
Idaho	3.6	4.7	—	—	—	—	—	—	—
Illinois	1.5	1.9	1.4	2.2	2.4	3.2	4.6	—	—
Iowa	1.4	1.6	2.3	2.3	—	—	—	—	—
Kansas	2.2	3.0	2.9	2.4	—	—	—	—	—
Michigan	1.4	1.8	1.7	—	—	—	—	—	—
Mississippi	9.5	10.2	8.8	—	—	—	—	—	—
Montana	2.2	3.2	—	—	—	—	—	—	—
North Carolina	5.1	4.4	5.5	8.0	—	—	—	—	—
South Carolina	16.6	16.9	14.4	19.5	23.7	28.0	28.2	—	—
West Virginia	12.6	12.1	11.5	—	—	—	—	—	—
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over	2.4	2.4	2.4	2.7	4.7	4.2	4.6	4.4	5.2
MEASLES (7)									
States with complete data (15 States and District of Columbia), total	2.8	3.0	2.5	4.0	3.2	8.2	2.4	6.1	11.7
Alabama	6.4	3.1	2.4	8.7	4.5	5.0	.8	16.1	12.3
California	1.9	5.2	.3	.6	6.2	2.1	.6	7.1	7.2
Connecticut	2.1	.8	3.0	3.3	1.3	12.8	2.6	3.2	11.0
District of Columbia	2.4	.2	(1)	3.6	(1)	7.3	.9	.7	7.5
Indiana	4.5	1.9	3.7	2.0	1.7	12.0	1.9	5.7	8.5
Louisiana	.6	4.7	2.5	8.6	12.5	4.4	.4	23.0	6.2
Maryland	5.9	.4	1.4	6.6	1.3	14.1	1.5	3.3	9.7
Minnesota	.3	3.3	3.2	.5	2.3	7.1	.6	5.6	11.5
Nebraska	.3	6.2	2.4	.7	5.2	1.6	(1)	7.1	3.0
New Jersey	2.4	3.2	.9	6.4	.6	11.0	3.2	5.3	10.2
New York (exclusive of New York City)	1.7	1.4	2.7	3.5	2.6	4.6	3.0	4.5	8.1
Ohio	2.1	2.8	3.5	2.9	.6	12.5	1.3	2.6	9.6
Pennsylvania	4.2	2.3	3.8	5.2	2.7	11.4	5.5	3.2	18.1
Tennessee	3.8	4.9	1.0	7.8	5.4	10.8	2.0	10.4	19.6
Virginia	3.2	3.9	1.6	6.4	4.6	4.2	3.2	9.2	22.8
Wisconsin	1.4	3.3	2.7	.5	3.4	5.1	2.2	2.7	7.1
Other States:									
Georgia	2.1	4.4	1.0	—	—	—	—	—	—
Hawaii	10.2	4.3	5.0	2.3	—	—	—	—	—
Idaho	1.8	2.0	—	—	—	—	—	—	—
Illinois	4.2	1.0	8.6	1.1	4.0	4.8	8.1	—	—
Iowa	.1	8.1	1.4	.6	—	—	—	—	—
Kansas	.4	4.2	2.4	1.0	—	—	—	—	—
Michigan	.6	4.7	3.1	—	—	—	—	—	—
Mississippi	.4	1.4	4.3	—	—	—	—	—	—
Montana	.4	2.2	—	—	—	—	—	—	—
North Carolina	3.2	.1	.6	16.6	—	—	—	—	—
South Carolina	2.2	.5	.1	16.1	3.8	.3	.1	—	—
West Virginia	2.3	4.9	4.5	—	—	—	—	—	—
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over	2.6	2.3	2.4	4.2	3.4	8.0	2.5	5.7	8.4

<sup>1</sup>No deaths.

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
SCARLET FEVER (8)									
States with complete data (15 States and District of Columbia), total.....	2.0	1.7	2.1	1.8	2.0	2.3	2.7	3.2	3.9
Alabama.....	1.1	1.4	1.4	.4	.9	.6	.8	.6	.3
California.....	.9	1.2	1.7	1.0	1.2	.9	1.4	2.3	2.3
Connecticut.....	.7	1.6	.9	1.3	1.4	2.3	3.0	3.9	3.6
District of Columbia.....	1.0	2.3	2.3	1.5	1.7	1.8	1.1	1.7	2.4
Indiana.....	3.4	2.1	3.2	2.1	2.5	3.0	3.3	2.3	2.8
Louisiana.....	.7	.6	.6	.5	.6	.6	.6	.4	.3
Maryland.....	1.9	2.1	2.3	.8	1.1	1.3	1.1	2.8	3.3
Minnesota.....	.9	1.4	2.6	2.4	3.7	6.2	6.3	8.4	9.6
Nebraska.....	1.5	2.2	3.8	3.0	1.3	1.9	2.4	2.7	3.8
New Jersey.....	2.0	1.5	1.1	1.6	2.5	2.1	1.8	1.8	2.7
New York (exclusive of New York City).....	2.3	1.5	2.0	2.0	1.9	2.1	2.1	3.4	3.3
Ohio.....	3.3	2.6	2.2	2.0	2.4	2.9	3.9	3.8	5.3
Pennsylvania.....	2.3	1.9	2.5	2.6	2.8	2.9	3.7	3.8	4.4
Tennessee.....	2.4	1.6	2.4	1.6	1.8	1.6	1.3	1.3	1.6
Virginia.....	1.4	1.1	1.5	1.0	1.3	1.3	1.7	1.4	1.9
Wisconsin.....	2.1	3.0	2.5	2.5	2.1	2.7	3.7	7.4	8.7
Other States:									
Georgia.....	1.5	1.3	1.3	—	—	—	—	—	—
Hawaii.....	(1)	.3	(1)	1.1	—	—	—	—	—
Idaho.....	2.2	2.0	—	—	—	—	—	—	—
Illinois.....	4.5	3.9	3.9	2.1	2.3	3.3	3.8	—	—
Iowa.....	1.6	2.5	2.2	2.2	—	—	—	—	—
Kansas.....	1.2	2.4	3.3	2.7	—	—	—	—	—
Michigan.....	2.3	2.7	3.0	—	—	—	—	—	—
Mississippi.....	.5	.6	.8	—	—	—	—	—	—
Montana.....	1.9	2.8	—	—	—	—	—	—	—
North Carolina.....	2.0	1.2	1.7	1.2	—	—	—	—	—
South Carolina.....	1.0	.7	.9	.5	.2	.2	.3	—	—
West Virginia.....	1.7	1.9	1.5	—	—	—	—	—	—
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	3.2	2.5	2.7	2.6	3.0	3.4	3.4	4.3	4.4
WHOPPING COUGH (9)									
States with complete data (15 States and District of Columbia), total.....	3.4	4.1	5.9	5.1	6.1	8.8	6.8	7.9	9.4
Alabama.....	3.4	9.5	9.8	7.7	13.6	11.8	9.0	15.9	13.3
California.....	2.4	3.5	5.0	6.4	3.8	3.4	10.1	3.7	7.7
Connecticut.....	2.5	2.0	2.6	6.4	3.6	6.2	7.5	5.3	9.1
District of Columbia.....	5.7	2.7	5.0	4.6	3.6	8.3	4.5	2.8	7.5
Indiana.....	4.3	3.0	5.4	4.3	5.6	12.4	5.5	9.6	8.6
Louisiana.....	5.4	5.9	5.4	6.8	10.4	9.0	10.9	7.2	14.3
Maryland.....	7.6	4.5	7.9	7.4	12.1	11.7	11.3	9.1	17.2
Minnesota.....	2.1	2.6	4.5	3.1	3.0	7.0	3.9	5.4	6.2
Nebraska.....	4.0	2.6	3.6	3.2	3.7	7.6	3.6	2.1	5.7
New Jersey.....	3.3	2.2	4.7	4.7	4.6	4.6	6.8	7.3	6.4
New York (exclusive of New York City).....	2.7	4.0	3.8	3.9	3.7	7.2	3.8	5.7	6.1
Ohio.....	2.4	3.0	8.0	3.8	4.2	10.3	5.8	7.5	8.3
Pennsylvania.....	3.1	3.9	6.0	5.7	4.8	10.0	7.0	7.5	11.0
Tennessee.....	6.3	6.3	7.4	5.2	13.3	14.6	6.6	11.8	11.0
Virginia.....	6.2	10.8	10.9	7.7	18.9	13.4	10.7	21.8	17.1
Wisconsin.....	1.9	8.3	3.8	2.3	2.6	5.6	4.1	4.6	6.0
Other States:									
Georgia.....	3.8	9.0	9.4	—	—	—	—	—	—
Hawaii.....	.3	3.5	27.9	4.3	—	—	—	—	—
Idaho.....	6.3	4.3	—	—	—	—	—	—	—
Illinois.....	2.7	2.1	3.4	3.7	4.2	5.1	4.4	—	—
Iowa.....	2.4	3.7	4.1	3.2	—	—	—	—	—
Kansas.....	1.3	3.5	3.9	5.0	—	—	—	—	—
Michigan.....	3.7	3.6	5.4	—	—	—	—	—	—
Mississippi.....	3.4	6.9	9.4	—	—	—	—	—	—
Montana.....	8.9	3.0	—	—	—	—	—	—	—
North Carolina.....	5.7	8.5	8.3	6.2	—	—	—	—	—
South Carolina.....	5.3	10.8	12.7	10.0	13.7	5.2	7.7	—	—
West Virginia.....	7.4	12.0	12.8	—	—	—	—	—	—
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	1.7	1.9	3.0	2.7	3.1	5.0	3.6	3.5	4.3

1 No deaths

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
<b>DIPHTHERIA (10)</b>									
States with complete data (15 States and District of Columbia), total.....	3.7	4.2	5.6	6.6	7.2	7.1	7.6	9.2	12.3
Alabama.....	7.8	7.1	9.6	9.2	9.7	8.2	6.8	6.0	8.4
California.....	2.9	3.4	3.4	6.0	5.2	6.0	5.7	15.7	15.3
Connecticut.....	.8	2.0	3.9	5.6	6.1	5.4	8.4	11.4	12.8
District of Columbia.....	7.1	3.7	7.0	9.4	5.1	6.2	8.0	6.5	9.2
Indiana.....	4.1	4.1	4.7	5.7	7.0	5.8	5.5	7.9	13.9
Louisiana.....	6.4	5.0	6.6	7.0	9.9	7.3	6.5	6.0	7.7
Maryland.....	4.0	3.4	4.5	6.6	7.5	6.3	5.6	7.7	10.1
Minnesota.....	1.4	1.2	2.6	2.8	3.3	6.2	9.3	8.8	8.6
Nebraska.....	3.5	3.2	3.5	4.0	3.4	2.7	5.7	8.0	10.4
New Jersey.....	2.9	3.2	11.2	11.8	10.8	8.5	9.1	9.6	13.8
New York (exclusive of New York City).....	1.6	2.5	3.4	4.0	4.8	4.6	6.4	7.1	9.0
Ohio.....	2.8	2.8	3.4	5.7	7.9	7.6	6.2	6.8	11.3
Pennsylvania.....	3.6	5.2	7.2	8.9	9.0	8.6	10.6	11.6	15.7
Tennessee.....	9.3	6.6	8.4	8.2	7.5	11.1	7.5	8.5	10.6
Virginia.....	8.5	6.1	7.8	7.7	6.4	9.6	10.0	9.2	14.4
Wisconsin.....	1.8	2.4	2.8	3.4	4.5	5.6	6.2	7.4	13.1
Other States.....									
Georgia.....	5.0	4.5	6.0	-----	-----	-----	-----	-----	-----
Hawaii.....	5.7	11.3	8.9	16.9	-----	-----	-----	-----	-----
Idaho.....	2.5	3.1	-----	-----	-----	-----	-----	-----	-----
Illinois.....	4.7	7.1	9.9	8.7	8.9	5.7	5.8	-----	-----
Iowa.....	1.7	1.8	1.3	2.7	-----	-----	-----	-----	-----
Kansas.....	3.7	3.6	3.6	3.3	-----	-----	-----	-----	-----
Michigan.....	3.5	6.2	10.5	-----	-----	-----	-----	-----	-----
Mississippi.....	9.9	6.8	7.1	-----	-----	-----	-----	-----	-----
Montana.....	1.7	.7	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	7.3	7.9	11.0	10.6	-----	-----	-----	-----	-----
South Carolina.....	4.9	7.3	8.6	10.1	8.7	8.9	6.7	-----	-----
West Virginia.....	9.3	6.2	7.4	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	4.3	5.7	8.6	9.5	10.2	9.5	10.2	12.7	15.5
<b>INFLUENZA (11)</b>									
States with complete data (15 States and District of Columbia), total.....	24.9	19.0	54.2	43.0	22.6	41.0	29.4	19.4	42.5
Alabama.....	40.3	35.5	119.8	71.0	30.2	66.5	46.0	26.4	49.4
California.....	13.6	9.1	20.0	40.2	13.7	23.5	15.8	11.2	20.5
Connecticut.....	17.1	13.4	38.8	22.6	18.8	36.7	27.1	19.5	38.6
District of Columbia.....	18.1	8.2	20.5	17.6	19.6	27.9	13.6	7.2	35.0
Indiana.....	33.3	19.7	59.2	59.6	25.4	50.3	43.8	23.0	56.1
Louisiana.....	42.1	39.9	79.1	62.0	29.6	64.9	49.4	31.2	41.2
Maryland.....	20.6	10.3	42.5	19.1	21.7	33.4	20.6	14.5	34.7
Minnesota.....	21.8	15.9	39.6	42.8	19.1	29.0	24.0	9.0	24.9
Nebraska.....	21.8	17.7	45.9	63.8	26.8	41.7	41.2	19.7	49.0
New Jersey.....	13.6	8.9	25.2	15.7	11.1	19.6	11.1	15.8	31.8
New York (exclusive of New York City).....	13.2	10.4	38.4	18.2	13.8	30.0	14.8	11.1	28.3
Ohio.....	28.8	19.4	59.6	51.7	23.3	40.4	28.6	13.9	42.1
Pennsylvania.....	28.1	20.4	67.3	44.7	25.6	45.5	30.1	26.1	45.0
Tennessee.....	37.0	31.3	106.3	67.9	32.3	70.6	52.5	38.8	93.1
Virginia.....	47.2	29.4	91.9	47.2	45.9	63.8	44.5	34.2	85.1
Wisconsin.....	18.1	30.7	42.3	44.3	20.9	36.4	32.4	15.4	39.4
Other States.....									
Georgia.....	44.1	32.2	86.3	-----	-----	-----	-----	-----	-----
Hawaii.....	11.0	10.5	17.6	24.4	-----	-----	-----	-----	-----
Idaho.....	9.2	11.2	-----	-----	-----	-----	-----	-----	-----
Illinois.....	20.3	11.7	34.6	-----	-----	-----	-----	-----	-----
Iowa.....	25.7	26.9	51.5	55.3	-----	-----	-----	-----	-----
Kansas.....	30.0	29.3	51.3	81.2	-----	-----	-----	-----	-----
Michigan.....	16.5	11.9	37.3	-----	-----	-----	-----	-----	-----
Mississippi.....	37.5	29.3	105.6	-----	-----	-----	-----	-----	-----
Montana.....	32.7	22.9	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	33.4	24.4	78.2	45.2	-----	-----	-----	-----	-----
South Carolina.....	65.9	49.7	80.4	76.6	19.4	33.9	22.9	-----	-----
West Virginia.....	33.8	27.8	91.2	-----	-----	-----	-----	-----	-----
Industrial policy holders, Metropolitan Life Insurance Co., ages 1 and over.....	19.3	13.2	37.7	22.0	15.7	27.4	19.4	14.2	30.1

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
ACUTE ANTERIOR POLIOMYELITIS (16)									
States with complete data (10 States and District of Columbia), total.....	1.4	1.4	0.7	1.2	1.8	0.8	1.6	0.9	0.8
California.....	.8	2.8	.9	1.5	4.4	.6	3.1	.8	.8
Connecticut.....	5.9	1.2	.5	.8	1.0	.4	1.3	1.6	.7
District of Columbia.....	.8	.6	.8	1.0	1.3	1.5	.9	.2	.2
Indiana.....	.6	.7	.3	.2	1.4	.6	.9	.5	.8
Louisiana.....	.9	2.3	.6	1.0	2.0	.7	.8	.6	.6
Maryland.....	.7	.4	.2	1.6	.4	.8	.9	1.2	.5
Minnesota.....	2.4	1.6	.4	2.3	1.4	.6	5.8	1.3	.7
New York (exclusive of New York City).....	2.9	1.9	1.4	1.7	1.0	2.0	2.0	1.8	1.1
Ohio.....	.8	1.6	.6	1.1	2.5	.7	1.0	.6	.5
Pennsylvania.....	1.0	.5	.5	.8	1.1	.5	.7	.6	.7
Virginia.....	.6	.8	1.3	1.3	1.5	1.1	1.2	1.1	1.2
Other States.....	.9	.8	1.0	.8	.9	1.0	.9	.....	.....
Alabama.....	1.2	1.1	.....	.....	.....	.....	.....	.....	.....
Georgia.....	.8	(1)	1.1	3	.....	.....	.....	.....	.....
Hawaii.....	.7	1.3	.....	.....	.....	.....	.....	.....	.....
Idaho.....	1.3	.7	2	.....	.....	.....	.....	.....	.....
Illinois.....	1.1	1.7	9	7	.....	.....	.....	.....	.....
Iowa.....	.6	3.6	5	6	.....	.....	.....	.....	.....
Kansas.....	2.2	.8	1.0	.....	.....	.....	.....	.....	.....
Michigan.....	.4	.8	.6	.....	.....	.....	.....	.....	.....
Mississippi.....	2.8	1.1	.....	.....	.....	.....	.....	.....	.....
Montana.....	.9	3.4	.7	.....	.....	.....	.....	.....	.....
Nebraska.....	3.5	.4	.4	.....	.....	.....	.....	.....	.....
New Jersey.....	.6	.4	.6	.6	.....	.....	.....	.....	.....
North Carolina.....	.9	.9	.6	1.0	1.4	9	2.2	.....	.....
South Carolina.....	.9	1.0	1.2	1.6	1.3	.....	.....	.....	.....
Tennessee.....	1.4	.6	.9	.....	.....	.....	.....	.....	.....
West Virginia.....	1.6	1.0	.4	.5	.....	.....	.....	.....	.....
Wisconsin.....	2.6	1.1	.6	1.2	2.0	.7	1.4	1.0	.7
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MENINGOCOCCUS MENINGITIS (18)									
States with complete data (11 States and District of Columbia), total.....	2.0	2.5	3.0	1.6	1.1	1.1	1.0	0.9	1.2
California.....	2.5	2.8	6.9	2.2	2.0	2.1	.8	.9	1.1
Connecticut.....	.7	.9	1.4	1.1	.6	.7	.8	1.6	3.1
District of Columbia.....	5.7	2.0	2.9	1.0	.6	.9	.6	(1)	1.3
Indiana.....	5.5	8.3	2.7	2	3	3	.6	.4	.4
Louisiana.....	2.3	3.6	2.7	.8	1.2	1.1	.5	.6	.9
Minnesota.....	1.6	1.4	1.8	1.8	2.3	.6	.7	.5	.8
Nebraska.....	1.6	2.5	2.6	1.8	.7	1.3	1.0	.5	.8
New York (exclusive of New York City).....	1.0	1.2	1.3	.7	.4	.4	1.0	.5	.6
Ohio.....	1.5	1.8	2.7	2.0	.7	.5	.8	.5	1.0
Pennsylvania.....	1.9	2.2	2.8	1.6	.7	.9	.9	.8	.8
Virginia.....	1.8	2.3	1.5	1.5	1.0	.9	1.1	1.4	.9
Wisconsin.....	1.3	2.0	3.7	3.3	4.1	4.1	3.8	4.1	4.6
Other States.....	2.8	1.5	1.0	.7	.....	.....	.....	.....	.....
Alabama.....	1.8	3.0	.....	.....	.....	.....	.....	.....	.....
Georgia.....	2.3	4.3	22.1	4.0	.....	.....	.....	.....	.....
Hawaii.....	.6	6.9	.....	.....	.....	.....	.....	.....	.....
Idaho.....	3.2	2.4	3.3	3.0	1.8	.8	.8	.....	.....
Iowa.....	2.6	3.3	1.6	.9	.....	.....	.....	.....	.....
Kansas.....	1.3	2.8	2.8	1.1	.....	.....	.....	.....	.....
Maryland.....	1.8	1.3	1.5	.....	.....	.....	.....	.....	.....
Michigan.....	2.4	7.5	17.9	.....	.....	.....	.....	.....	.....
Mississippi.....	1.5	6.9	.8	.....	.....	.....	.....	.....	.....
Montana.....	2.2	4.1	.....	.....	.....	.....	.....	.....	.....
New Jersey.....	1.8	1.8	2.7	.....	.....	.....	.....	.....	.....
North Carolina.....	.0	.8	.5	.5	.....	.....	.....	.....	.....
South Carolina.....	2.1	4.1	3.0	1.6	1.7	2.2	1.9	.....	.....
Tennessee.....	4.3	9.6	2.2	.9	.4	.....	.....	.....	.....
West Virginia.....	1.0	1.1	.8	.....	.....	.....	.....	.....	.....

1 No deaths.

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
<b>TUBERCULOSIS, ALL FORMS (23-32)</b>									
States with complete data (16 States and District of Columbia), total.....	66.3	70.8	75.4	79.5	80.6	87.8	88.0	91.5	95.2
Alabama.....	85.7	86.0	85.7	89.6	86.5	93.7	99.2	96.2	98.2
California.....	88.9	98.3	106.3	114.8	117.6	119.4	127.3	136.5	136.5
Connecticut.....	52.1	58.8	63.5	69.4	68.6	80.1	76.8	82.8	90.5
District of Columbia.....	119.7	116.8	116.0	120.6	127.9	123.9	118.1	121.9	127.2
Indiana.....	57.6	63.6	70.2	70.0	70.5	82.0	80.9	82.4	91.7
Kansas.....	37.0	36.8	37.8	40.0	34.9	40.6	42.6	41.9	41.8
Louisiana.....	81.5	84.1	86.3	87.7	93.7	101.7	104.4	109.7	108.6
Maryland.....	95.7	98.9	104.6	105.8	102.7	115.1	121.9	120.8	124.5
Minnesota.....	40.0	46.3	54.5	56.0	62.2	67.4	64.1	69.3	75.8
Nebraska.....	24.6	24.5	29.9	26.3	30.0	33.1	33.3	35.8	34.8
New Jersey.....	65.1	69.3	73.1	72.9	74.5	83.3	82.5	86.2	91.2
New York (exclusive of New York City).....	62.9	68.3	72.4	76.2	77.7	85.1	89.0	91.8	96.0
Ohio.....	62.0	63.0	69.8	73.3	73.5	80.5	77.3	82.7	86.6
Pennsylvania.....	56.4	61.5	66.1	71.4	72.6	79.6	79.3	82.6	86.6
Tennessee.....	107.2	115.7	120.3	129.6	129.1	144.6	135.1	144.9	148.7
Virginia.....	87.0	85.0	91.4	103.9	105.8	111.5	114.6	115.3	123.6
Wisconsin.....	48.1	50.5	53.3	56.5	60.7	66.2	62.2	64.0	66.6
Other States:									
Georgia.....	72.9	73.4	74.0	-----	-----	-----	-----	-----	-----
Hawaii.....	98.2	102.3	110.4	124.0	-----	-----	-----	-----	-----
Idaho.....	29.8	32.9	-----	-----	-----	-----	-----	-----	-----
Illinois.....	59.1	59.6	68.8	73.4	76.8	76.4	78.1	-----	-----
Iowa.....	28.5	33.1	32.6	34.9	-----	-----	-----	-----	-----
Michigan.....	53.3	59.8	66.1	-----	-----	-----	-----	-----	-----
Mississippi.....	72.1	78.4	74.2	-----	-----	-----	-----	-----	-----
Montana.....	61.3	62.3	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	69.4	74.7	83.3	78.1	-----	-----	-----	-----	-----
South Carolina.....	70.7	76.5	78.1	85.4	88.9	94.7	94.6	-----	-----
West Virginia.....	59.8	65.4	68.0	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	76.7	81.3	87.3	90.6	93.8	99.5	98.2	104.4	110.8

## CANCER (45-53)

States with complete data (16 States and District of Columbia), total.....	102.1	102.0	101.1	101.0	98.4	97.5	94.9	92.4	92.4
Alabama.....	53.6	53.8	51.3	50.3	50.3	45.9	44.5	45.3	42.5
California.....	124.2	125.7	118.3	121.0	116.9	116.2	113.9	115.9	121.4
Connecticut.....	112.9	114.5	116.1	111.7	109.6	109.2	109.7	105.8	99.5
District of Columbia.....	134.7	136.7	131.8	127.2	127.7	122.8	119.6	116.1	106.2
Indiana.....	100.6	99.9	99.8	100.5	102.1	103.5	98.7	95.8	97.5
Kansas.....	97.0	96.4	92.6	99.1	99.4	91.0	83.6	76.3	79.7
Louisiana.....	68.2	68.0	64.4	64.7	65.0	63.0	60.8	60.0	57.7
Maryland.....	111.6	111.5	109.6	115.7	101.1	106.7	104.8	103.8	108.4
Minnesota.....	121.3	119.9	113.9	114.1	108.7	105.7	100.7	103.7	101.9
Nebraska.....	98.5	100.9	94.5	96.5	92.5	88.8	89.2	80.7	78.9
New Jersey.....	113.4	107.1	108.3	105.1	103.8	102.8	103.0	97.2	92.2
New York (exclusive of New York City).....	131.6	131.5	130.3	123.8	125.5	122.4	121.6	120.5	117.7
Ohio.....	100.8	105.2	104.6	106.1	101.8	102.0	98.1	96.4	94.1
Pennsylvania.....	98.9	100.0	103.0	102.4	98.8	98.6	94.6	92.4	91.4
Tennessee.....	57.1	58.2	58.0	58.3	57.3	57.7	51.4	51.3	48.5
Virginia.....	64.3	61.6	62.8	70.1	65.6	65.1	65.0	62.8	61.4
Wisconsin.....	115.8	112.8	110.0	107.7	103.4	108.8	105.4	100.5	92.6
Other States:									
Georgia.....	52.7	52.2	48.8	-----	-----	-----	-----	-----	-----
Hawaii.....	57.2	59.6	64.5	62.2	-----	-----	-----	-----	-----
Idaho.....	66.4	61.4	-----	-----	-----	-----	-----	-----	-----
Iowa.....	112.9	110.8	107.8	112.0	-----	-----	-----	-----	-----
Michigan.....	90.6	90.7	93.3	-----	-----	-----	-----	-----	-----
Mississippi.....	48.7	46.8	44.5	-----	-----	-----	-----	-----	-----
Montana.....	74.6	78.9	-----	-----	-----	-----	-----	-----	-----
South Carolina.....	45.3	39.7	42.5	44.6	41.8	40.4	40.9	-----	-----
West Virginia.....	57.7	59.4	57.9	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	85.4	79.5	78.8	77.0	75.6	75.1	71.8	71.5	72.7

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
<b>DIABETES MELLITUS (59)</b>									
States with complete data (9 States and District of Columbia), total.....	21.5	20.4	19.9	20.3	18.3	18.6	17.1	16.7	17.9
Alabama.....	10.6	8.8	9.0	9.7	8.2	7.8	6.7	5.6	5.5
California.....	19.2	18.1	18.9	18.8	18.3	18.1	16.7	17.6	18.9
District of Columbia.....	24.9	26.6	27.7	27.8	23.0	22.4	15.5	17.6	18.0
Louisiana.....	12.8	12.1	11.2	11.8	11.2	11.1	8.5	8.1	8.9
Maryland.....	23.0	21.3	19.5	23.2	18.9	23.2	18.2	20.3	20.3
Nebraska.....	21.2	20.6	21.5	22.4	20.1	16.6	18.9	17.3	21.4
New York (exclusive of New York City).....	29.5	28.6	27.3	25.1	24.5	23.9	22.7	21.5	23.4
Ohio.....	21.7	21.7	20.7	22.0	19.0	19.4	18.2	16.8	19.6
Pennsylvania.....	24.7	22.4	22.3	22.7	19.6	20.3	18.7	18.8	19.0
Virginia.....	14.9	14.3	11.9	12.3	13.8	13.6	11.4	10.6	12.1
Other States:									
Connecticut.....	21.9	17.9	17.5	-----	-----	-----	-----	-----	-----
Georgia.....	10.9	11.6	10.2	-----	-----	-----	-----	-----	-----
Hawaii.....	12.3	13.0	12.6	7.2	-----	-----	-----	-----	-----
Idaho.....	12.5	7.8	-----	-----	-----	-----	-----	-----	-----
Indiana.....	16.4	15.7	15.0	-----	-----	-----	-----	-----	-----
Iowa.....	19.8	21.0	18.4	19.3	-----	-----	-----	-----	-----
Kansas.....	21.9	20.9	21.4	20.4	-----	-----	-----	-----	-----
Michigan.....	19.1	18.1	19.7	-----	-----	-----	-----	-----	-----
Minnesota.....	19.5	18.2	18.6	20.2	-----	-----	-----	-----	-----
Mississippi.....	7.8	8.9	7.3	-----	-----	-----	-----	-----	-----
Montana.....	15.4	16.2	-----	-----	-----	-----	-----	-----	-----
New Jersey.....	23.9	23.1	23.0	-----	-----	-----	-----	-----	-----
South Carolina.....	10.3	8.9	8.6	9.0	7.2	7.4	6.3	-----	-----
Tennessee.....	10.6	10.8	10.2	9.4	-----	-----	-----	-----	-----
West Virginia.....	11.7	12.5	9.7	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	21.4	18.7	18.6	17.9	17.1	17.0	15.5	15.1	16.2

## CEREBRAL HEMORRHAGE, APOPLEXY (82 a, b)

States with complete data (8 States and District of Columbia), total.....	91.5	93.3	93.7	98.6	93.7	95.2	98.5	101.3	100.0
Alabama.....	60.7	65.5	64.5	63.7	54.1	52.9	51.5	47.5	43.3
District of Columbia.....	105.3	99.2	83.8	107.2	103.7	117.3	114.5	114.8	121.0
Indiana.....	105.7	106.1	108.4	111.2	102.6	109.5	105.7	106.2	104.3
Louisiana.....	57.5	61.8	60.3	64.9	66.3	61.4	66.3	61.0	53.4
Maryland.....	108.6	105.1	102.0	101.5	100.5	114.0	124.3	121.2	121.2
Nebraska.....	84.4	84.5	88.4	83.3	82.4	77.4	79.6	80.0	81.1
New York (exclusive of New York City).....	102.8	105.6	117.4	115.9	112.5	121.6	120.0	131.1	128.7
Ohio.....	109.1	107.7	112.0	113.9	103.6	112.1	114.5	115.4	116.0
Pennsylvania.....	83.4	85.5	88.7	91.9	89.7	91.2	90.2	95.6	95.0
Other States:									
California.....	78.6	81.9	80.2	86.2	-----	-----	-----	-----	-----
Hawaii.....	50.7	48.3	53.9	61.9	-----	-----	-----	-----	-----
Idaho.....	95.3	71.3	-----	-----	-----	-----	-----	-----	-----
Iowa.....	111.2	95.8	97.1	97.9	-----	-----	-----	-----	-----
Kansas.....	94.8	99.7	108.9	113.1	99.0	100.1	94.9	-----	-----
Michigan.....	87.7	89.9	93.6	-----	-----	-----	-----	-----	-----
Minnesota.....	75.4	79.5	75.3	-----	-----	-----	-----	-----	-----
Mississippi.....	64.3	66.6	64.9	-----	-----	-----	-----	-----	-----
Montana.....	68.0	66.6	-----	-----	-----	-----	-----	-----	-----
New Jersey.....	79.4	80.4	83.4	-----	-----	-----	-----	-----	-----
Tennessee.....	60.0	62.9	58.8	-----	-----	-----	-----	-----	-----
Virginia.....	97.7	95.8	89.4	-----	-----	-----	-----	-----	-----
West Virginia.....	67.9	63.7	49.3	-----	-----	-----	-----	-----	-----



TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
<b>HEART DISEASES (90-95)</b>									
States with complete data (10 States and District of Columbia), total.....	225.5	226.4	231.1	228.8	211.3	211.8	196.4	185.7	181.2
Alabama.....	117.0	134.0	136.2	133.2	102.6	108.0	101.0	94.0	78.7
California.....	263.4	289.7	249.0	242.2	236.0	225.1	222.7	217.9	212.6
District of Columbia.....	299.0	315.9	325.5	314.8	282.1	281.1	285.4	214.3	227.8
Indiana.....	167.9	182.5	197.4	189.6	171.1	169.2	160.2	156.6	150.7
Louisiana.....	178.0	199.1	191.9	183.8	170.4	172.3	160.6	163.6	155.8
Maryland.....	251.0	245.2	239.2	237.5	229.2	233.0	209.8	194.6	203.6
Nebraska.....	159.1	159.4	166.0	171.5	156.6	107.5	122.1	117.9	90.4
New York (exclusive of New York City).....	317.1	303.5	324.3	309.4	287.5	303.7	274.5	232.5	253.9
Ohio.....	220.3	225.3	227.1	222.7	207.5	204.9	183.9	171.7	174.1
Pennsylvania.....	233.4	239.1	236.2	237.8	218.3	223.6	203.6	187.9	189.5
Virginia.....	188.3	178.2	176.7	198.5	177.0	181.3	168.5	163.9	163.9
Other States:									
Connecticut.....	203.0	183.6	193.8	179.2	182.3	-----	-----	-----	-----
Georgia.....	132.8	138.0	124.5	-----	-----	-----	-----	-----	-----
Hawaii.....	105.7	121.4	118.2	112.9	-----	-----	-----	-----	-----
Idaho.....	159.7	174.6	-----	-----	-----	-----	-----	-----	-----
Iowa.....	200.7	195.8	215.4	212.9	-----	-----	-----	-----	-----
Kansas.....	153.9	171.5	163.7	175.3	-----	-----	-----	-----	-----
Michigan.....	204.4	229.6	245.8	-----	-----	-----	-----	-----	-----
Minnesota.....	177.9	173.4	155.3	153.8	-----	-----	-----	-----	-----
Mississippi.....	94.3	104.3	97.2	-----	-----	-----	-----	-----	-----
Montana.....	139.6	139.4	-----	-----	-----	-----	-----	-----	-----
New Jersey.....	234.3	232.1	246.0	-----	-----	-----	-----	-----	-----
Tennessee.....	108.4	120.3	128.9	124.1	-----	-----	-----	-----	-----
West Virginia.....	110.6	116.6	112.7	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over, other organic heart only (90).....	150.2	147.1	149.0	144.4	134.7	136.4	128.7	125.2	128.7
<b>PNEUMONIA, ALL FORMS (107-109)</b>									
States with complete data (15 States and District of Columbia), total.....	79.7	82.7	93.6	98.5	79.5	102.3	99.0	101.7	114.5
Alabama.....	83.0	85.8	87.5	99.2	68.0	96.0	105.6	118.8	90.8
California.....	66.5	73.0	78.8	84.6	74.6	74.7	78.2	88.3	90.4
Connecticut.....	70.0	87.3	105.4	106.7	87.1	111.2	111.4	103.4	128.9
District of Columbia.....	139.8	122.1	143.3	133.3	121.8	172.1	138.0	161.4	223.4
Indiana.....	82.3	88.5	98.8	103.9	79.0	109.8	99.2	98.7	116.1
Kansas.....	61.5	54.2	58.0	62.5	50.3	59.0	65.3	68.0	89.0
Louisiana.....	81.4	91.5	85.9	90.0	43.8	59.5	105.2	110.5	95.0
Maryland.....	126.3	118.2	137.6	131.9	127.9	149.3	138.6	143.5	169.5
Minnesota.....	69.1	71.1	70.5	74.2	67.4	74.4	74.3	72.4	78.4
Nebraska.....	64.3	64.0	60.1	71.4	56.7	80.4	77.7	80.9	87.7
New Jersey.....	78.0	77.7	103.5	81.1	54.7	78.9	68.6	63.2	73.7
New York (exclusive of New York city).....	75.0	85.4	106.7	97.9	86.6	114.3	98.1	92.4	115.5
Ohio.....	77.9	74.6	91.2	98.9	82.4	101.7	100.9	92.8	120.9
Pennsylvania.....	97.2	97.6	106.4	122.0	100.2	137.6	129.4	138.4	158.0
Tennessee.....	84.5	88.9	91.5	98.3	85.0	109.4	86.2	105.3	101.4
Wisconsin.....	65.4	72.6	74.6	88.1	66.3	84.4	90.4	90.9	107.5
Other States:									
Georgia.....	82.9	84.1	77.0	-----	-----	-----	-----	-----	-----
Hawaii.....	102.3	118.2	141.1	148.7	-----	-----	-----	-----	-----
Idaho.....	76.5	104.0	-----	-----	-----	-----	-----	-----	-----
Illinois.....	69.1	63.5	81.9	103.1	74.9	92.1	83.4	-----	-----
Iowa.....	66.8	79.6	63.8	70.2	-----	-----	-----	-----	-----
Michigan.....	67.6	68.2	88.8	-----	-----	-----	-----	-----	-----
Mississippi.....	56.3	60.9	62.7	-----	-----	-----	-----	-----	-----
Montana.....	70.3	80.2	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	87.1	92.9	90.3	93.5	-----	-----	-----	-----	-----
South Carolina.....	104.8	102.4	97.0	113.2	105.1	113.6	114.1	-----	-----
Virginia.....	80.6	83.7	76.2	-----	-----	-----	-----	-----	-----
West Virginia.....	82.5	91.5	79.5	-----	-----	-----	-----	-----	-----
Industrial policy holders, Metropolitan Life Insurance Co., ages 1 and over.....	62.1	62.7	74.0	72.8	63.0	78.2	69.0	70.2	77.6

TABLE 5.—Mortality from certain causes in several States and in a group of wage earners, 1923-1931—Continued

	Rates per 100,000 population								
	1931	1930	1929	1928	1927	1926	1925	1924	1923
DIARRHEA AND ENTERITIS UNDER 2 YEARS (119)									
States with complete data (14 States and District of Columbia), total.....	13.7	17.9	16.7	18.4	19.5	25.5	31.7	27.8	33.2
Alabama.....	20.0	31.2	27.4	35.1	30.0	36.2	31.4	33.7	34.9
California.....	11.5	14.8	15.3	15.6	19.3	20.2	24.8	28.8	33.6
Connecticut.....	7.9	10.7	14.0	6.9	11.3	16.4	18.9	20.1	31.6
District of Columbia.....	16.6	19.9	18.4	14.0	12.2	27.3	36.2	24.4	30.8
Indiana.....	13.1	18.4	16.9	17.7	17.0	26.5	30.9	25.5	28.2
Louisiana.....	22.4	27.1	26.2	24.9	36.7	32.8	54.8	50.5	32.7
Maryland.....	31.3	30.0	32.5	29.6	29.2	36.3	48.8	43.2	50.9
Minnesota.....	4.4	6.8	4.1	7.4	6.6	9.9	13.5	11.2	14.8
Nebraska.....	7.1	8.3	6.6	9.9	9.4	13.6	17.3	13.9	16.1
New Jersey.....	9.1	11.5	12.2	14.7	16.4	20.2	26.0	26.1	29.9
New York (exclusive of New York City).....	9.8	10.7	11.7	12.2	13.8	18.6	24.8	21.3	27.7
Ohio.....	11.7	16.4	12.5	14.6	14.3	23.3	27.9	17.6	27.7
Pennsylvania.....	17.6	23.3	20.3	22.5	23.4	32.6	43.2	36.6	47.9
Tennessee.....	23.4	28.6	23.9	32.0	25.9	37.7	35.6	34.1	34.7
Wisconsin.....	10.4	11.2	11.7	11.1	14.1	15.4	20.5	14.8	18.8
Other States:									
Georgia.....	18.8	24.8	17.9	-----	-----	-----	-----	-----	-----
Hawaii.....	49.3	76.6	103.1	82.8	-----	-----	-----	-----	-----
Idaho.....	4.7	4.7	-----	-----	-----	-----	-----	-----	-----
Iowa.....	5.9	0.6	3.9	6.1	-----	-----	-----	-----	-----
Kansas.....	8.1	12.1	10.4	18.9	20.8	29.2	36.7	-----	-----
Michigan.....	9.2	14.4	16.0	-----	-----	-----	-----	-----	-----
Mississippi.....	14.4	15.0	19.2	-----	-----	-----	-----	-----	-----
Montana.....	10.0	15.3	-----	-----	-----	-----	-----	-----	-----
North Carolina.....	22.2	29.7	30.1	39.1	-----	-----	-----	-----	-----
Virginia.....	23.5	26.1	19.7	-----	-----	-----	-----	-----	-----
West Virginia.....	54.3	70.1	57.8	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over, including adults as well as children under 2 years.....	5.9	8.0	7.9	8.7	9.1	10.5	12.3	11.3	11.1

## NEPHRITIS (130-132)

States with complete data (11 States and District of Columbia), total.....	92.2	98.1	97.9	101.8	98.4	103.5	96.5	94.2	95.0
Alabama.....	83.8	100.4	95.8	88.6	78.8	83.4	81.2	71.6	77.4
California.....	80.9	84.0	89.1	97.4	90.5	95.5	82.8	87.4	89.6
District of Columbia.....	145.2	160.4	162.7	156.9	176.2	159.3	144.8	133.8	132.2
Indiana.....	74.3	84.9	80.9	81.8	80.4	95.7	89.8	93.4	92.7
Louisiana.....	108.6	112.0	108.2	112.7	93.5	103.6	82.7	78.5	73.4
Maryland.....	139.2	149.6	151.3	140.0	151.3	158.7	150.1	141.4	139.3
Nebraska.....	67.9	58.6	68.6	65.2	47.8	49.4	50.1	53.9	57.3
New Jersey.....	96.3	102.2	99.5	103.4	96.3	101.4	99.9	104.5	103.4
New York (exclusive of New York City).....	115.0	120.0	112.4	110.4	114.1	124.2	118.6	112.4	111.7
Ohio.....	74.0	78.4	84.7	88.2	89.8	89.1	76.9	80.3	80.7
Pennsylvania.....	92.7	104.3	104.8	111.9	103.6	110.8	107.2	99.9	104.3
Virginia.....	101.5	108.3	103.0	119.6	113.9	118.7	114.9	103.7	96.1
Other States:									
Connecticut.....	88.3	73.2	71.6	-----	-----	-----	-----	-----	-----
Georgia.....	107.4	127.0	134.5	-----	-----	-----	-----	-----	-----
Hawaii.....	69.4	66.9	-----	-----	-----	-----	-----	-----	-----
Idaho.....	38.7	36.2	-----	-----	-----	-----	-----	-----	-----
Iowa.....	45.9	43.2	49.3	52.3	-----	-----	-----	-----	-----
Kansas.....	95.3	102.7	90.5	94.4	-----	-----	-----	-----	-----
Michigan.....	58.8	63.7	66.1	-----	-----	-----	-----	-----	-----
Minnesota.....	50.8	52.2	55.2	57.7	-----	-----	-----	-----	-----
Mississippi.....	84.7	97.1	95.6	-----	-----	-----	-----	-----	-----
Montana.....	66.7	73.1	-----	-----	-----	-----	-----	-----	-----
South Carolina.....	121.2	112.6	105.4	113.1	100.1	103.4	103.6	-----	-----
Tennessee.....	69.6	75.9	71.6	-----	-----	-----	-----	-----	-----
West Virginia.....	64.5	61.3	54.3	-----	-----	-----	-----	-----	-----
Industrial policyholders, Metropolitan Life Insurance Co., ages 1 and over.....	68.1	69.2	70.6	71.8	70.8	74.9	71.2	66.5	69.6

**COURT DECISION RELATING TO PUBLIC HEALTH**

*Portion of plumbing law held void because not covered by title of act.*— (Kentucky Court of Appeals; State Board of Health et al. v. Willman, 45 S. W. (2d) 458; decided Jan. 15, 1932.) The title of chapter 167, acts of 1930, read as follows:

An act defining plumbing, master plumber, and journeyman plumber in counties containing cities of the first and second class of the Commonwealth of Kentucky, providing for examinations and issuing certificates to qualified registered master plumbers and registered journeymen plumbers and placing same under the jurisdiction of the State Board of Health of Kentucky, prescribing its powers and duties in relation to this act and providing penalties for violation of the provisions of this act.

The State constitution contained a provision that "No law enacted by the general assembly shall relate to more than one subject and that shall be expressed in the title." Section 3 of the act in question provided for the adoption by the State board of health of a plumbing code, while section 4 contained requirements as to the materials and methods to be used in plumbing and drainage work.

The court of appeals upheld the action of the lower court in adjudging these sections to be void, saying that there was nothing in the title from which the reader could infer that the act contained the subject matter of sections 3 and 4 and that such subject matter was wholly foreign to the title. The remainder of the act was not affected by the decision.

# DEATHS DURING WEEK ENDED APRIL 23, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended April 23, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended April 23, 1932	Corresponding week, 1931
Policies in force.....	73, 603, 968	75, 152, 845
Number of death claims.....	15, 009	14, 384
Death claims per 1,000 policies in force, annual rate.....	10. 7	10. 0
Death claims per 1,000 policies, first 16 weeks of year, annual rate.....	10. 6	11. 1

Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended April 23, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr 23, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 16 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mor- tality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	8, 376	11. 9	627	4 53	12 3	737	12. 6	13 8
Akron.....	40	7. 9	3	37	6. 9	1	7. 6	8 5
Albany <sup>4</sup> .....	40	16 0	3	61	15. 3	8	15 1	18 7
Atlanta <sup>5</sup> .....	69	12. 7	3	29	16 2	7	14. 2	16 1
White.....	35	9 7	1	15	41. 6	2	11. 2	12 9
Colored.....	34	18 6	2	67	36. 2	5	20. 1	22 5
Baltimore <sup>6</sup> .....	104	12 4	8	28	14. 9	16	14. 8	17 1
White.....	140	10 9	5	23	13. 3	11	13. 7	15 7
Colored.....	54	18 8	3	48	22. 4	5	19. 8	23 6
Birmingham <sup>6</sup> .....	67	12 6	2	21	10. 6	5	12 2	15 6
White.....	39	11 9	1	16	10. 0	2	10. 0	12 2
Colored.....	28	13 9	1	27	11. 7	3	15. 7	21 0
Boston.....	252	16 7	10	30	15 9	30	15. 7	16 3
Bridgeport.....	39	13 8	3	53	12 1	3	12 2	13 0
Buffalo.....	162	14. 4	16	77	12 3	12	14. 3	15. 2
Cambridge.....	32	14 6	4	83	11. 9	2	14. 4	13 7
Camden.....	36	15. 8	2	35	14. 5	4	16 2	17 5
Canton.....	17	8. 2	1	25	9 3	4	10 4	11 2
Chicago <sup>1</sup> .....	714	10 6	49	48	11. 1	54	10. 9	11 9
Cincinnati.....	111	12 6	5	32	17. 7	11	16. 7	18 3
Cleveland.....	210	11. 9	14	45	11. 8	23	12. 2	12 7
Columbus.....	85	14. 8	7	70	14 6	8	14 7	15 1
Dallas <sup>6</sup> .....	56	10. 4	1	-----	9 9	6	11. 5	12 6
White.....	41	9 2	1	-----	8 8	5	10. 6	11 1
Colored.....	15	16 1	0	-----	15 4	1	16 2	20 1
Dayton.....	76	16 7	4	67	9 7	4	12 1	12 2
Denver.....	86	15 3	5	49	13 2	5	16. 5	15 7
Des Moines.....	35	12. 5	3	51	7 9	1	12. 7	11 9
Detroit.....	261	7 9	27	49	9 1	35	8 6	9 8
Duluth.....	26	13 3	2	58	7 2	1	10. 5	11 7
El Paso.....	15	7 3	4	-----	16 4	2	14. 4	17 6
Erie.....	31	13 6	6	127	14 2	1	12. 4	12 0
Evansville.....	16	7 9	0	0	11. 0	3	10 1	12 1
Fall River <sup>7</sup> .....	30	13 6	3	80	13 6	5	13. 5	13 7
Flint.....	24	7 4	4	59	10 2	6	8 9	8 0
Fort Wayne.....	21	9 1	4	103	10 6	0	11. 0	12 0
Fort Worth <sup>8</sup> .....	32	9 8	1	-----	14 6	4	10 9	12 3
White.....	25	9 1	1	-----	13 4	2	10. 5	11 8
Colored.....	7	13 7	0	-----	21. 2	2	13. 1	14 5
Grand Rapids.....	36	10 8	2	34	9 7	5	9 6	9 9
Houston <sup>9</sup> .....	62	10 0	8	-----	12 5	6	11. 2	11 8
White.....	45	9 9	8	-----	10 8	6	10. 5	10 8
Colored.....	17	10. 4	0	-----	20. 7	0	12 9	14 8
Indianapolis <sup>1</sup> .....	81	11. 8	9	73	13 0	6	13. 8	15 2
White.....	71	11. 8	9	83	12 5	5	13. 4	14 7
Colored.....	10	11. 3	0	0	16. 2	1	16. 8	19 0

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended April 23, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Apr. 23, 1932				Corresponding week, 1931		Death rate for the first 16 week	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate	Deaths under 1 year	1932	1931
Jersey City.....	73	11.9	8	66	12.6	9	12.0	13.7
Kansas City, Kans.*	23	9.7	1	22	11.9	0	13.1	15.5
White.....	9	4	1	27	11.0	0	12.8	14.2
Colored.....	5	11.0	0	0	15.8	0	14.8	21.1
Kansas City, Mo.....	91	11.4	1	11	14.7	13	13.3	15.3
Knoxville*	25	11.7	2	51	15.3	1	12.9	14.6
White.....	18	10.1	2	56	14.3	1	11.9	13.4
Colored.....	7	20.0	0	0	20.5	0	18.4	20.7
Long Beach.....	22	7.1	2	52	9.6	0	10.0	10.8
Los Angeles.....	244	9.2	13	39	11.0	20	11.5	11.6
Louisville*	75	12.7	4	37	13.7	7	14.5	17.3
White.....	58	11.6	4	42	12.2	6	13.0	15.5
Colored.....	17	18.6	0	0	21.9	1	22.7	27.1
Lowell*	26	13.6	4	105	13.0	1	14.8	14.6
Lynn.....	24	12.2	2	57	5.6	0	12.2	11.9
Memphis*	94	18.7	12	131	15.1	7	17.3	18.1
White.....	40	12.8	7	119	12.1	3	13.2	15.3
Colored.....	54	28.0	5	151	20.0	4	23.9	22.8
Miami*	25	11.5	1	28	12.5	4	12.7	14.5
White.....	19	11.2	1	39	11.4	2	11.8	13.6
Colored.....	6	12.4	0	0	16.5	2	15.8	17.4
Milwaukee.....	100	8.7	8	38	8.3	9	9.5	10.6
Minneapolis.....	91	9.9	5	33	10.6	7	11.3	12.2
Nashville*	51	17.0	5	75	17.8	3	15.3	18.5
White.....	36	16.5	4	78	16.7	3	14.2	16.0
Colored.....	15	18.3	1	62	20.7	0	18.4	25.1
New Bedford†	23	10.7	2	58	13.9	6	13.7	13.4
New Haven.....	33	10.6	2	40	12.8	4	13.7	13.6
New Orleans*	155	17.1	10	57	17.0	13	16.1	18.9
White.....	97	15.0	7	61	13.9	4	13.7	15.5
Colored.....	58	22.1	3	49	24.4	9	21.9	27.5
New York.....	1,588	11.5	121	54	11.1	143	12.0	13.3
Bronx Borough.....	213	8.1	10	29	7.6	15	8.8	9.6
Brooklyn Borough.....	538	10.5	53	59	10.6	55	11.2	12.2
Manhattan Borough.....	637	18.8	54	77	16.4	53	18.4	20.2
Queens Borough.....	162	7.0	3	12	7.1	17	7.6	8.6
Richmond Borough.....	38	11.9	1	20	15.6	3	14.5	14.3
Newark, N. J.....	110	12.8	7	38	11.5	11	12.0	12.6
Oakland.....	52	9.1	1	13	11.8	2	11.5	11.5
Oklahoma City.....	41	10.4	3	41	9.8	4	10.5	12.3
Omaha.....	44	10.5	3	34	13.2	1	14.8	14.3
Paterson.....	31	11.7	4	73	14.3	2	14.0	16.2
Peoria.....	24	11.3	1	28	12.5	2	12.5	13.7
Philadelphia.....	508	13.4	37	57	14.2	48	14.0	16.0
Pittsburgh.....	164	12.6	16	73	17.0	20	14.7	17.9
Portland, Oreg.....	76	12.8	4	51	12.6	1	12.3	12.7
Providence.....	72	14.7	5	48	13.7	9	15.6	15.3
Richmond*	58	16.4	4	60	15.6	8	15.0	18.1
White.....	35	13.8	3	67	13.5	4	12.6	15.4
Colored.....	23	22.8	1	46	20.7	4	21.0	24.8
Rochester.....	86	13.4	3	29	12.1	6	12.9	13.8
St. Louis.....	230	14.4	44	157	17.3	20	14.8	16.1
St. Paul.....	74	13.8	8	32	11.9	1	11.4	11.7
Salt Lake City†	30	10.8	4	63	13.1	1	11.5	12.9
San Antonio.....	58	12.3	10	18.1	16	14.8	15.4	15.4
San Diego.....	45	14.4	1	22	9.7	1	16.1	15.0
San Francisco.....	151	11.9	5	35	11.2	5	13.6	14.2
Schenectady.....	23	12.5	0	0	9.8	3	11.9	12.3
Seattle.....	97	13.5	4	40	10.9	5	12.4	13.0
Somerville.....	20	9.8	1	40	8.9	1	10.5	11.1
South Bend.....	20	9.4	1	29	10.6	3	8.2	9.3
Spokane.....	26	11.6	1	27	11.2	1	12.7	13.3
Springfield, Mass.....	35	11.9	6	101	9.3	2	12.1	13.5
Syracuse.....	52	12.6	2	26	14.4	2	12.7	13.0
Toledo.....	28	13.5	3	55	12.1	2	12.5	14.6
Tampa*	19	9.2	4	114	8.4	3	12.5	13.9
White.....	17	10.4	3	105	8.2	1	12.0	13.8
Colored.....	2	4.6	1	158	9.4	1	14.5	16.2

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended April 23, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Apr. 23, 1932				Corresponding week, 1931		Death rate for the first 16 weeks	
	Total deaths	Death rate	Deaths under 1 year	Infant mortality rate	Death rate,	Deaths under 1 year	1932	1931
Toledo.....	76	13.2	6	65	12.5	3	12.9	13.6
Trenton.....	51	21.5	3	59	15.2	2	17.9	19.3
Utica.....	36	18.3	2	57	11.7	0	17.1	16.6
Washington, D. C. <sup>1</sup>	168	17.8	14	79	16.6	14	17.6	18.3
White.....	103	15.1	9	74	12.7	3	15.8	15.7
Colored.....	65	24.9	5	89	26.7	11	22.1	25.1
Waterbury.....	17	8.7	1	33	9.8	2	10.6	11.1
Wilmington, Del. <sup>2</sup>	40	19.6	2	45	14.7	5	18.1	16.8
Worcester.....	48	12.6	4	56	16.7	5	13.4	15.3
Yonkers.....	22	8.1	2	52	8.3	3	8.7	10.1
Youngstown.....	25	7.5	1	16	11.2	1	10.8	11.7

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 35; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

#### Reports for Weeks Ended April 30, 1932, and May 2, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 30, 1932, and May 2, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 30, 1932	Week ended May 2, 1931	Week ended Apr. 30, 1932	Week ended May 2, 1931	Week ended Apr. 30, 1932	Week ended May 2, 1931	Week ended Apr. 30, 1932	Week ended May 2, 1931
<b>New England States:</b>								
Maine .....	1	4	25	5	290	83	0	1
New Hampshire .....	1	2	—	1	22	33	0	0
Vermont .....	—	—	—	—	97	—	0	0
Massachusetts .....	32	38	5	4	854	555	1	2
Rhode Island .....	2	3	—	—	132	32	0	0
Connecticut .....	5	7	5	3	158	406	0	1
<b>Middle Atlantic States:</b>								
New York .....	114	110	25	11	2,045	2,702	4	6
New Jersey .....	26	37	14	17	711	905	0	4
Pennsylvania .....	70	116	—	—	1,725	4,378	13	10
<b>East North Central States:</b>								
Ohio .....	60	68	117	77	3,445	1,154	2	13
Indiana .....	16	12	45	4	98	818	5	6
Illinois .....	53	135	90	10	1,275	1,680	5	21
Michigan .....	18	59	10	4	2,010	99	1	8
Wisconsin .....	5	11	52	29	2,320	677	2	1
<b>West North Central States:</b>								
Minnesota .....	5	14	—	4	24	185	0	3
Iowa .....	4	3	—	—	6	69	2	3
Missouri .....	17	20	22	1	—	429	2	6
North Dakota .....	2	7	—	—	15	84	0	3
South Dakota .....	2	3	—	2	3	57	0	0
Nebraska .....	6	7	—	5	2	30	1	3
Kansas .....	7	8	2	3	453	89	1	1
<b>South Atlantic States:</b>								
Delaware .....	10	1	—	—	1	205	0	0
Maryland .....	15	14	26	12	48	1,861	2	3
District of Columbia .....	7	20	1	2	19	307	0	3
Virginia .....	—	—	—	—	—	—	1	—
West Virginia .....	6	8	114	28	439	65	2	0
North Carolina <sup>1</sup> .....	20	19	812	24	608	641	0	4
South Carolina .....	5	20	1,259	543	176	115	0	3
Georgia <sup>2</sup> .....	4	5	95	115	68	166	3	3
Florida <sup>3</sup> .....	8	8	13	6	13	176	0	3

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended Apr. 30, 1932, 13 cases: 1 case in North Carolina, 6 cases in Georgia, 3 cases in Florida, 3 cases in Alabama, and 1 case in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 30, 1932, and May 2, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931
<b>East South Central States:</b>								
Kentucky	17		135		57	248	1	4
Tennessee	8	3	358	85	56	108	4	2
Alabama <sup>1</sup>	10	6	161	101	18	308	2	8
Mississippi	11	4					0	2
<b>West South Central States:</b>								
Arkansas		3	35	92	2	56	3	1
Louisiana	25	16	19	13	37	3	0	1
Oklahoma <sup>4</sup>	10	16	89	73	41	24	2	4
Texas <sup>1</sup>	24	24	76	47	422	73	0	3
<b>Mountain States:</b>								
Montana		2	17		98	7	0	0
Idaho	1	1	2	6		1	0	1
Wyoming		1			24	2	0	2
Colorado	4	1			151	171	1	0
New Mexico	23	4	2	2	33	34	0	1
Arizona	3	1	4	2	1	12	3	0
Utah <sup>2</sup>	2			5	1	1	0	0
<b>Pacific States:</b>								
Washington	3	4	1	33	258	118	0	2
Oregon		5	37	29	361	104	1	0
California	84	80	74	88	603	1,297	5	8
	746	934	8,242	1,486	19,203	20,112	69	159
Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931
<b>New England States:</b>								
Maine	0	0	35	20	0	0	1	5
New Hampshire	0	0	13	1	0	0	2	0
Vermont	0	0	4	2	0	0	0	0
Massachusetts	1	0	520	340	0	0	1	4
Rhode Island	0	0	58	56	0	0	1	3
Connecticut	0	0	130	59	0	0	0	1
<b>Middle Atlantic States:</b>								
New York	0	1	1,692	863	9	3	4	14
New Jersey	1	1	361	203	0	0	2	1
Pennsylvania	1	0	1,025	652	0	0	10	13
<b>East North Central States:</b>								
Ohio	1	1	527	646	41	90	13	7
Indiana	1	0	91	205	7	72	3	1
Illinois	3	1	407	513	13	79	3	4
Michigan	1	1	453	544	2	12	2	7
Wisconsin	1	1	65	187	1	0	2	3
<b>West North Central States:</b>								
Minnesota	0	0	126	68	1	12	0	2
Iowa	0	0	62	81	62	68	0	0
Missouri	0	0	56	317	3	30	3	2
North Dakota	0	0	17	44	6	2	0	0
South Dakota	1	3	2	21	0	11	0	0
Nebraska	0	0	15	58	13	66	1	2
Kansas	0	0	35	62	2	118	2	3
<b>South Atlantic States:</b>								
Delaware	0	0	18	32	0	0	1	1
Maryland <sup>1</sup>	0	0	120	74	0	0	4	5
District of Columbia	0	0	35	17	0	0	0	0
Virginia								
West Virginia	0	3	23	31	3	3	13	9
North Carolina <sup>1</sup>	2	1	81	44	3	1	1	3
South Carolina	2	1	3	4	0	0	7	5
Georgia <sup>1</sup>	1	0	13	51	0	0	9	11
Florida <sup>1</sup>	0	0	4	4	1	1	3	7

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Apr. 30, 1932, 13 cases: 1 case in North Carolina, 6 cases in Georgia, 2 cases in Florida, 3 cases in Alabama, and 1 case in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.



*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended April 30, 1932, and May 2, 1931—Continued*

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931	Week ended Apr 30, 1932	Week ended May 2, 1931
<b>East South Central States</b>								
Kentucky.....	1	1	108	103	1	5	11	2
Tennessee.....	2	2	41	12	13	7	6	1
Alabama <sup>1</sup> .....	0	0	7	19	12	27	11	7
Mississippi.....	0	0	8	13	14	54	3	6
<b>West South Central States</b>								
Arkansas.....	0	0	3	23	12	7	1	6
Louisiana.....	1	0	10	30	5	39	17	12
Oklahoma <sup>1</sup> .....	0	0	12	38	6	83	2	2
Texas <sup>2</sup> .....	2	0	22	34	45	84	7	17
<b>Mountain States</b>								
Montana.....	0	0	15	15	12	3	3	0
Idaho.....	0	0	1	7	0	3	0	0
Wyoming.....	0	0	5	12	1	2	3	0
Colorado.....	0	0	30	30	0	3	0	2
New Mexico.....	0	0	6	7	0	0	1	0
Arizona.....	0	0	2	2	0	1	1	4
Utah <sup>2</sup> .....	0	0	3	9	0	0	0	0
<b>Pacific States</b>								
Washington.....	0	1	31	35	20	43	3	2
Oregon.....	0	0	4	12	15	31	2	1
California.....	2	4	151	153	5	45	4	14
	24	22	6, 450	5, 848	328	1, 012	163	189

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended Apr 30, 1932, 13 cases: 1 case in North Carolina, 6 cases in Georgia, 2 cases in Florida, 3 cases in Alabama, and 1 case in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influa- enza	Mala- ria	Meas- les	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>March, 1932</i>										
Louisiana.....	3	115	292	21	639	28	0	73	15	64
Montana.....	2	2	472		498		3	148	2	3
Nevada.....	2	2	9		4		0	6	4	4
North Carolina.....	12	90	414		2, 320	70	1	240	9	24
Oklahoma <sup>1</sup> .....	5	67	2, 629	21	128	9	0	95	101	11
Oregon.....		18	753		709	1	0	91	62	6
Rhode Island.....	2	40	3		2, 176		0	323	0	1
South Carolina.....		91	5, 426	481	420	147	4	32	3	21
South Dakota.....	7	19	75		117		3	51	31	4
Virginia.....	13	138	9, 349	15	516	32	3	230	1	20
Washington.....	5	14	98		2, 723		1	142	121	5
Wisconsin.....	7	44	2, 778		2, 245		3	399	3	5

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

March, 1932		Cases		Puerperal septicemia:		Cases	
Chicken pox:		Cases		Oregon .....		1	
Louisiana .....	46			Rabies in animals:			
Montana .....	72			Louisiana .....		9	
Nevada .....	72			South Carolina .....		10	
North Carolina .....	580			Rocky Mountain spotted or tick fever			
Oklahoma <sup>1</sup> .....	49			Montana .....		1	
Oregon .....	169			Oregon .....		2	
Rhode Island .....	49			Scabies			
South Carolina .....	182			Oregon .....		54	
South Dakota .....	31			Septic sore throat			
Virginia .....	666			Louisiana .....		1	
Washington .....	533			Montana .....		9	
Wisconsin .....	1, 116			North Carolina .....		12	
Conjunctivitis				Oklahoma <sup>1</sup> .....		27	
Oklahoma <sup>1</sup> .....	2			Oregon .....		1	
Dengue				Rhode Island .....		1	
South Carolina .....	5			Tetanus			
Diarrhea				Louisiana .....		3	
South Carolina .....	269			Oklahoma <sup>1</sup> .....		2	
Diarrhea and Dysentery				Trachoma			
Virginia .....	65			Montana .....		8	
German measles				Oklahoma <sup>1</sup> .....		11	
North Carolina .....	62			Wisconsin .....		1	
South Carolina .....	1			Trench mouth			
Washington .....	78			Oregon .....		1	
Wisconsin .....	56			Tularaemia			
Hookworm disease				Louisiana .....		16	
Louisiana .....	5			Oklahoma <sup>1</sup> .....		2	
South Carolina .....	93			South Carolina .....		6	
Impetigo contagiosa				Virginia .....		4	
Montana .....	8			Typhus fever			
Oregon .....	52			North Carolina .....		1	
Jaundice				South Carolina .....		1	
Montana .....	1			Virginia .....		1	
Oregon (Infectious) .....	2			Undulant fever			
Leprosy:				Louisiana .....		1	
Louisiana .....	3			Montana .....		1	
Lethargic encephalitis				Nevada .....		1	
Montana .....	2			Oklahoma <sup>1</sup> .....		1	
Virginia .....	1			South Carolina .....		1	
Washington .....	1			South Dakota .....		1	
Wisconsin .....	4			Washington .....		1	
Mumps:				Wisconsin .....		3	
Louisiana .....	2			Vincent's angina			
Montana .....	26			Oregon .....		9	
Oklahoma <sup>1</sup> .....	33			South Carolina .....		1	
Oregon .....	94			Whooping cough			
Rhode Island .....	273			Louisiana .....		154	
South Carolina .....	259			Montana .....		81	
South Dakota .....	32			Nevada .....		14	
Washington .....	116			North Carolina .....		1, 563	
Wisconsin .....	936			Oklahoma <sup>1</sup> .....		63	
Ophthalmia neonatorum				Oregon .....		101	
North Carolina .....	1			Rhode Island .....		71	
Oregon .....	1			South Carolina .....		178	
South Carolina .....	9			South Dakota .....		106	
Washington .....	1			Virginia .....		1, 647	
Wisconsin .....	1			Washington .....		131	
Paratyphoid fever:				Wisconsin .....		881	
Oregon .....	1						
South Carolina .....	11						
Wisconsin .....	8						

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country, and have an estimated aggregate population of more than 33,995,000. The estimated population of the 89 cities reporting deaths is more than 32,440,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended April 23, 1932, and April 25, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	802	790	-----
96 cities.....	333	343	713
Measles			
45 States.....	16,175	20,714	-----
96 cities.....	7,205	8,573	-----
Meningococcus meningitis			
46 States.....	74	152	-----
96 cities.....	34	78	-----
Poliovmyelitis			
46 States.....	17	20	-----
Scarlet fever			
46 States.....	5,400	5,488	-----
96 cities.....	2,965	2,602	1,469
Smallpox			
46 States.....	344	997	-----
96 cities.....	54	133	74
Typhoid fever			
46 States.....	197	137	-----
96 cities.....	32	19	29
<i>Deaths reported</i>			
Influenza and pneumonia			
89 cities.....	764	916	-----
Smallpox			
89 cities.....	0	1	-----
Memphis, Tenn.....	0	1	-----

*City reports for week ended April 23, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	0	0	0		0	32	6	3
New Hampshire:								
Concord	0	0	0		0	4	0	3
Manchester	0	0	0		0	0	0	1
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre		0						
Burlington	2	0	1		0	1	1	0
Massachusetts:								
Boston	35	27	3		1	91	65	30
Fall River	6	3	0		0	92	5	5
Springfield	29	2	0		0	70	10	0
Worcester	6	3	3	1	0	2	6	4
Rhode Island:								
Pawtucket	0	2	0		0	0	0	0
Providence	3	7	9	1	0	56	6	8
Connecticut:								
Bridgeport	4	3	0	2	1	8	1	4
Hartford	5	3	0		2	0	15	2
New Haven	28	1	0		0	0	16	2
MIDDLE ATLANTIC								
New York:								
Buffalo	29	9	2		2	47	11	21
New York	229	218	108	34	22	328	138	178
Rochester	3	3	0		0	85	12	3
Syracuse	14	1	0		0	516	5	3
New Jersey:								
Camden	8	7	0		0	0	0	2
Newark	40	12	1	10	1	53	100	10
Trenton	1	3	0		0	4	4	4
Pennsylvania:								
Philadelphia	110	59	6	13	14	11	72	36
Pittsburgh	42	13	6	2	2	21	35	30
Reading	11	0	1		0	4	0	3
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	18	6	4		2	2	0	8
Cleveland	102	22	3	36	5	1,168	50	16
Columbus	7	2	3	1	1	35	2	2
Toledo	18	3	0	2	1	21	0	6
Indiana:								
Fort Wayne	0	2	6		1	1	0	1
Indianapolis	21	3	5		0	9	87	5
South Bend	5	1	0		0	12	0	2
Terre Haute	1	0	0		0	1	0	3
Illinois:								
Chicago	110	83	30	5	6	670	15	54
Springfield	10	0	2	1	0	0	4	3
Michigan:								
Detroit	73	37	14	5	2	528	49	22
Flint	19	2	0	5	1	426	92	1
Grand Rapids	3	2	0		2	158	28	0
Wisconsin:								
Kenosha	0	0	0		0	41	0	0
Madison	9	0	1			1	0	
Milwaukee	74	9	2		0	1,062	27	0
Racine	24	1	0		0	387	49	2
Superior	2	0	0		1	0	26	1

## City reports for week ended April 23, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL								
Minnesota								
Duluth.....	18	0	0	-----	1	0	1	2
Minneapolis.....	18	10	4	-----	3	7	27	3
St. Paul.....	5	5	0	-----	1	4	29	8
Iowa								
Des Moines.....	0	0	2	-----	-----	0	0	-----
Sioux City.....	8	0	3	-----	-----	3	1	-----
Waterloo.....	13	0	0	-----	-----	0	0	-----
Missouri								
Kansas City.....	12	3	5	-----	0	4	4	11
St. Joseph.....	2	0	0	-----	0	0	1	3
St. Louis.....	25	29	12	-----	2	12	7	10
North Dakota								
Fargo.....	10	0	0	-----	0	32	1	0
South Dakota								
Aberdeen.....	3	0	0	-----	-----	4	0	-----
Nebraska								
Omaha.....	12	2	4	-----	0	3	1	5
Kansas								
Topeka.....	38	1	0	-----	1	2	8	2
Wichita.....	6	1	2	-----	0	102	0	1
SOUTH ATLANTIC								
Delaware								
Wilmington.....	0	2	0	-----	0	0	1	6
Maryland								
Baltimore.....	129	10	7	-----	6	2	114	9
Cumberland.....	0	0	0	-----	2	1	3	2
Frederick.....	0	0	1	-----	1	0	0	0
District of Columbia								
Washington.....	20	11	8	-----	3	12	0	13
Virginia								
Lynchburg.....	16	1	0	-----	1	0	0	0
Norfolk.....	8	1	0	-----	0	1	0	6
Richmond.....	5	2	0	-----	5	0	0	3
Roanoke.....	13	0	0	-----	0	0	0	0
West Virginia								
Charleston.....	0	0	1	-----	3	0	63	1
Huntington.....	0	1	1	-----	-----	0	0	-----
Wheeling.....	0	0	0	-----	0	11	0	1
North Carolina								
Raleigh.....	-----	0	-----	-----	-----	-----	-----	-----
Wilmington.....	3	0	0	-----	0	0	0	1
Winston-Salem.....	14	0	0	-----	0	4	1	1
South Carolina								
Charleston.....	1	0	0	-----	40	0	0	5
Columbia.....	3	0	0	-----	0	66	0	0
Georgia								
Atlanta.....	6	2	3	-----	13	0	5	7
Brunswick.....	3	0	0	-----	0	1	0	0
Savannah.....	3	0	0	-----	5	1	0	3
Florida								
Miami.....	4	2	4	-----	0	0	0	1
Tampa.....	1	1	0	-----	2	2	1	0
EAST SOUTH CENTRAL								
Kentucky								
Covington.....	0	1	0	-----	0	0	0	0
Lexington.....	0	-----	1	-----	6	0	5	2
Tennessee								
Memphis.....	2	2	1	-----	2	-----	0	6
Nashville.....	0	0	0	-----	0	0	0	4
Alabama								
Birmingham.....	2	0	1	-----	20	3	5	7
Mobile.....	2	0	1	-----	1	0	0	1
Montgomery.....	4	0	0	-----	2	1	12	-----

## City reports for week ended April 23, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	1	0	0	-----	-----	0	0	-----
Little Rock.....	11	0	1	-----	0	0	3	1
Louisiana:								
New Orleans.....	0	10	14	4	4	0	0	10
Shreveport.....	1	0	0	-----	0	8	5	7
Oklahoma:								
Muskogee.....	0	-----	0	-----	-----	8	0	-----
Oklahoma City..	3	1	12	-----	1	22	0	10
Texas:								
Dallas.....	7	5	0	1	1	-----	1	2
Fort Worth.....	9	2	0	-----	2	0	0	2
Galveston.....	0	0	4	-----	0	0	0	2
Houston.....	0	3	3	-----	1	0	0	4
San Antonio.....	2	3	0	-----	3	0	0	4
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	0	0	0
Great Falls.....	10	0	0	-----	0	0	0	1
Helena.....	0	0	0	-----	0	5	0	0
Missoula.....	0	0	0	-----	0	0	0	2
Idaho:								
Boise.....	0	0	0	-----	0	1	0	2
Colorado:								
Denver.....	33	7	8	-----	1	113	65	6
Pueblo.....	22	1	1	-----	0	2	0	0
New Mexico:								
Albuquerque.....	3	0	1	-----	0	65	8	0
Arizona:								
Phoenix.....	0	-----	0	-----	0	0	0	0
Utah:								
Salt Lake City..	69	2	1	-----	0	0	3	2
Nevada:								
Reno.....	1	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	21	2	1	-----	-----	215	8	-----
Spokane.....	6	2	0	-----	-----	0	0	-----
Tacoma.....	4	1	0	-----	0	24	0	3
Oregon:								
Portland.....	1	6	0	1	0	198	7	6
Salem.....	3	0	1	1	-----	0	2	-----
California:								
Los Angeles.....	134	27	28	38	2	9	20	8
Sacramento.....	31	1	2	-----	0	23	1	1
San Francisco.....	88	11	0	2	2	211	8	10

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
<b>NEW ENGLAND</b>											
Maine:											
Portland	4	1	0	0	0	2	0	0	0	5	22
New Hampshire:											
Concord	0	3	0	0	0	0	0	0	0	0	13
Manchester	1	14	0	0	0	0	0	0	0	0	11
Nashua	1	1	0	0	0	0	0	0	0	0	
Vermont											
Barre	0		0				0				
Burlington	1	0	1	1	0	0	0	1	0	0	11
Massachusetts											
Boston	84	172	0	0	0	15	1	0	0	41	252
Fall River	4	8	0	0	0	1	1	0	0	4	30
Springfield	13	8	0	0	0	1	0	0	0	3	38
Worcester	9	23	0	0	0	0	0	0	0	32	48
Rhode Island											
Pawtucket	2	0	0	0	0	0	0	0	0	0	22
Providence	13	23	0	0	0	4	0	0	0	25	72
Connecticut											
Bridgeport	10	16	0	0	0	1	0	0	0	2	39
Hartford	5	7	0	0	0	1	0	0	0	6	20
New Haven	5	22	0	0	0	0	0	0	0	18	33
<b>MIDDLE ATLANTIC</b>											
New York:											
Buffalo	27	114	0	1	0	9	0	0	0	29	157
New York	305	1,004	0	0	0	113	9	10	1	194	1,588
Rochester	11	75	0	0	0	0	0	1	0	8	82
Syracuse	15	26	0	0	0	0	0	0	0	36	52
New Jersey											
Camden	5	31	0	0	0	1	0	0	0	4	36
Newark	32	41	0	0	0	6	1	1	0	27	113
Trenton	3	10	0	0	0	1	0	0	0	3	51
Pennsylvania											
Philadelphia	99	231	0	0	0	21	2	0	0	160	508
Pittsburgh	30	79	0	0	0	6	1	0	0	53	164
Reading	5	19	0	0	0	2	0	0	0	19	28
<b>EAST NORTH CENTRAL</b>											
Ohio:											
Cincinnati	27	40	2	0	0	14	0	0	0	6	111
Cleveland	41	85	0	0	0	15	0	0	0	194	210
Columbus	10	4	0	2	0	2	0	0	0	17	85
Toledo	13	4	0	0	0	4	0	1	0	108	76
Indiana											
Fort Wayne	4	3	3	0	0	0	0	0	0	2	23
Indianapolis	12	9	6	1	0	5	0	0	0	29	
South Bend	6	5	0	0	0	2	0	0	0	1	20
Terre Haute	2	3	1	0	0	2	0	0	0	0	18
Illinois:											
Chicago	123	220	2	0	0	40	1	0	0	142	714
Springfield	4	4	0	0	0	0	1	0	0	7	22
Michigan											
Detroit	119	210	1	0	0	23	1	0	1	197	261
Flint	13	1	2	0	0	1	0	0	0	31	24
Grand Rapids	13	6	1	0	0	0		0	0	4	36
Wisconsin:											

## City reports for week ended April 23, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	0	0	0	0	2	0	0	0	3	26
Minneapolis.....	32	62	0	3	0	1	0	0	0	19	91
St. Paul.....	27	23	0	0	0	1	0	0	0	17	75
Iowa:											
Des Moines.....	8	16	2	1	—	—	0	0	—	0	35
Sioux City.....	2	2	1	0	—	—	0	0	—	1	—
Waterloo.....	1	0	0	0	—	—	0	0	—	2	—
Missouri:											
Kansas City.....	21	8	1	0	0	5	0	0	0	14	91
St. Joseph.....	3	1	0	0	0	6	0	0	0	0	36
St. Louis.....	62	25	3	4	0	10	2	1	0	48	230
North Dakota:											
Fargo.....	3	5	1	0	0	0	0	0	0	0	4
South Dakota:											
Aberdeen.....	1	2	0	0	—	—	0	0	—	1	—
Nebraska:											
Omaha.....	4	6	4	1	0	0	0	0	0	1	44
Kansas:											
Topeka.....	3	0	1	0	0	0	0	0	0	35	16
Wichita.....	3	1	2	0	0	0	0	0	0	0	41
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	5	8	0	0	0	0	0	0	0	2	40
Maryland:											
Baltimore.....	40	78	0	0	0	23	2	4	0	158	194
Cumberland.....	1	0	0	0	0	0	0	0	0	1	21
Frederick.....	0	2	0	0	0	0	0	0	0	0	2
Dist. of Columbia:											
Washington.....	24	25	0	0	0	15	0	1	0	31	168
Virginia:											
Lynchburg.....	0	0	0	0	0	0	0	0	0	27	15
Norfolk.....	1	3	0	0	0	2	0	0	0	10	46
Richmond.....	4	13	0	0	0	2	0	0	0	8	55
Roanoke.....	0	6	0	0	0	1	0	0	0	2	6
West Virginia:											
Charleston.....	0	4	1	0	0	4	0	0	0	10	15
Huntington.....	—	2	—	0	0	0	—	0	0	0	—
Wheeling.....	1	0	0	0	0	3	0	0	0	16	29
North Carolina:											
Raleigh.....	0	—	0	—	—	—	0	—	—	—	—
Wilmington.....	0	0	0	0	0	8	0	0	0	11	14
Winston-Salem.....	1	13	0	0	0	0	0	0	0	35	12
South Carolina:											
Charleston.....	0	0	1	0	0	1	0	1	0	0	26
Columbia.....	0	0	1	0	0	0	0	0	0	2	—
Georgia:											
Atlanta.....	5	8	2	0	0	4	0	0	0	1	60
Brunswick.....	0	0	0	0	0	1	0	0	0	0	3
Savannah.....	0	1	1	0	0	2	0	0	0	3	38
Florida:											
Miami.....	2	0	0	0	0	0	1	0	0	1	25
Tampa.....	1	1	0	0	0	0	0	0	0	0	22
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	4	0	0	0	0	1	0	0	0	0	14
Lexington.....	—	0	—	1	0	2	—	0	0	4	15
Tennessee:											
Memphis.....	9	8	2	3	0	9	0	0	0	26	94
Nashville.....	2	2	0	0	0	1	0	0	0	6	51
Alabama:											
Birmingham.....	2	4	1	0	0	4	0	0	1	0	67
Mobile.....	0	1	1	16	0	0	0	1	1	0	17
Montgomery.....	0	0	1	0	—	—	0	0	—	4	—



## City reports for week ended April 23, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas											
Fort Smith	1	0	0	0			0	0		0	
Little Rock	0	0	0	0	0	6	0	0	0	9	7
Louisiana											
New Orleans	12	11	1	1	0	7	2	1	1	3	155
Shreveport	1	0	1	0	0	2	0	0	0	4	39
Oklahoma											
Muskogee		0		0				0		0	
Oklahoma City	3	10	3	0	0	1	0	0	0	8	49
Texas											
Dallas	4	2	1	0	0	5	1	3	0	11	56
Fort Worth	2	4	7	4	0	2	0	1	0	0	32
Galveston	1	0	0	0	0	1	1	3	0	1	10
Houston	1	1	3	0	0	3	0	0	0	0	62
San Antonio	1	0	1	0	0	3	0	0	0	0	58
MOUNTAIN											
Montana											
Billings	1	0	0	0	0	0	0	0	0	0	8
Great Falls	1	0	0	0	0	0	0	0	0	0	
Helena	0	0	0	0	0	0	0	0	0	2	3
Missoula	1	3	1	0	0	0	0	0	0	0	9
Idaho											
Boise	2	2	1	10	0	0	0	0	0	0	16
Colorado											
Denver	12	14	0	0	0	2	0	0	0	28	78
Pueblo	1	2	0	0	0	0	0	0	0	3	8
New Mexico											
Albuquerque	0	7	0	0	0	3	0	0	0	1	13
Arizona											
Phoenix	1	0	0	0	0	3	0	0	0	0	
Utah											
Salt Lake City	3	1	0	0	0	0	0	1	0	1	30
Nevada											
Reno	0	0	0	0	0	0	0	0	0	0	4
PACIFIC											
Washington											
Seattle	7	9	3	2			1	0		2	
Spokane	5	1	7	0			0	0		9	
Tacoma	3	4	3	2	0	1	0	0	0	0	28
Oregon											
Portland	5	2	8	9	0	0	1	0	0	11	76
Salem	0	0	1	0			0	0		12	
California											
Los Angeles	32	64	7	1	0	29	1	1	0	56	244
Sacramento	2	0	1	0	0	5	1	2	0	2	25
San Francisco	20	12	1	7	0	6	0	0	0	15	151

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (Infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC									
New York									
New York .....	6	4	2	0	0	0	2	2	0
Rochester .....	1	1	0	0	0	0	0	0	0
Pennsylvania									
Philadelphia .....	3	1	0	0	0	0	0	0	0
Pittsburgh .....	1	0	0	0	0	0	0	0	1

## City reports for week ended April 23, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Polio-myelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	1	0	1	0	0	0	0	0	0
Indiana:									
Indianapolis.....	3	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	5	4	0	0	0	0	0	0	0
Michigan:									
Detroit.....	1	1	2	0	0	0	0	1	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	0	0	1	0	0	0	0	0	0
Iowa:									
Sioux City.....	2	0	0	0	0	0	0	0	0
Waterloo.....	0	1	0	0	0	0	0	0	0
Missouri:									
St. Joseph.....	1	0	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	0	0	1	1	0	0	0	0	0
District of Columbia:									
Washington.....	1	1	1	1	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Columbia.....	1	0	0	0	0	0	0	0	0
Georgia:									
Atlanta <sup>1</sup> .....	2	0	0	0	0	0	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	1	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Covington.....	0	1	0	0	0	0	0	0	0
Tennessee:									
Memphis.....	2	0	0	0	0	0	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	0	1	0	1	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	2	0	0	0	2	0	0	0	0
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Idaho:									
Boise.....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles <sup>2</sup> .....	0	0	0	0	0	0	0	4	0
San Francisco.....	1	0	0	1	0	0	0	0	0

<sup>1</sup> Typhus fever, 3 cases: 1 case at Atlanta, Ga., and 2 cases at Savannah, Ga.<sup>2</sup> Dengue, 1 case at Los Angeles, Calif.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 23, 1932, compared with those for a like period ended April 25, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, March 20 to April 23, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*

## DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 20, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr. 6, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931
98 cities.....	52	78	47	53	51	65	54	66	51	53
New England.....	65	70	88	46	62	84	29	79	36	58
Middle Atlantic.....	56	63	44	48	53	50	49	62	55	46
East North Central.....	31	82	29	64	46	86	44	83	41	58
West North Central.....	55	163	78	42	27	63	49	68	57	67
South Atlantic.....	60	61	37	47	37	40	49	65	40	51
East South Central.....	6	76	6	29	40	18	17	28	17	28
West South Central.....	112	64	158	85	92	54	119	74	102	71
Mountain.....	9	87	17	44	52	35	60	17	86	26
Pacific.....	70	69	57	53	70	57	110	43	59	63

## MEASLES CASE RATES

98 cities.....	727	1,206	846	1,122	860	1,327	982	1,316	1,108	1,342
New England.....	599	1,479	777	1,106	697	1,503	765	1,349	855	1,286
Middle Atlantic.....	598	1,321	621	1,250	500	1,422	554	1,544	579	1,419
East North Central.....	1,203	722	1,572	726	1,688	830	2,160	789	2,680	1,073
West North Central.....	186	651	398	532	388	704	724	589	491	830
South Atlantic.....	232	3,685	245	3,814	343	4,554	298	4,350	338	4,055
East South Central.....	19	1,650	6	1,515	23	1,708	0	1,627	12	1,615
West South Central.....	158	47	208	88	49	68	30	102	26	130
Mountain.....	603	1,140	664	661	1,008	844	1,336	922	1,043	661
Pacific.....	1,449	519	1,262	359	1,312	500	952	417	916	517

## SCARLET FEVER CASE RATES

98 cities.....	478	403	413	371	423	362	477	382	466	406
New England.....	731	697	683	577	774	474	796	584	682	575
Middle Atlantic.....	755	454	632	404	625	413	744	415	721	488
East North Central.....	397	378	345	377	360	337	399	382	369	431
West North Central.....	197	580	205	585	226	538	267	518	252	469
South Atlantic.....	382	311	345	291	318	356	310	307	317	305
East South Central.....	100	564	92	399	87	470	40	587	87	399
West South Central.....	49	78	46	95	53	105	56	112	46	98
Mountain.....	233	209	129	157	250	174	207	278	190	191
Pacific.....	133	104	122	92	145	104	148	116	171	86

## SMALLPOX CASE RATES

98 cities.....	4	17	4	14	6	19	7	22	8	21
New England.....	0	0	2	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	1	0	2	0	1
East North Central.....	2	7	4	9	4	6	6	19	2	20
West North Central.....	17	98	2	78	9	96	13	92	15	71
South Atlantic.....	0	4	0	2	8	18	0	10	0	6
East South Central.....	138	12	85	12	52	0	46	53	110	35
West South Central.....	0	78	8	71	10	81	7	95	8	98
Mountain.....	0	44	26	0	9	17	17	9	89	17
Pacific.....	15	22	13	16	28	53	27	27	25	41

See footnotes at end of table.

*Summary of weekly reports from cities, March 20 to April 23, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued.*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 26, 1932	Mar. 28, 1931	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931
98 cities.....	5	4	5	4	3	5	5	5	5	3
New England.....	5	2	0	2	2	2	0	2	0	2
Middle Atlantic.....	3	2	3	3	1	5	2	4	5	4
East North Central.....	3	2	4	2	2	3	4	2	1	2
West North Central.....	4	2	2	4	0	0	2	4	2	4
South Atlantic.....	12	12	8	14	16	16	12	8	12	2
East South Central.....	19	0	6	0	23	6	35	12	6	6
West South Central.....	20	7	13	10	0	3	10	7	23	0
Mountain.....	9	0	0	9	0	0	9	9	9	9
Pacific.....	6	10	17	2	6	8	6	10	6	4

## INFLUENZA DEATH RATES

91 cities.....	36	29	29	23	25	18	20	17	17	13
New England.....	17	14	17	2	5	19	7	7	10	7
Middle Atlantic.....	36	20	34	17	23	12	23	12	18	12
East North Central.....	41	25	24	18	22	14	20	10	13	6
West North Central.....	23	35	17	12	23	15	20	29	20	18
South Atlantic.....	36	32	39	40	61	30	29	32	30	10
East South Central.....	44	127	56	127	75	70	38	76	38	43
West South Central.....	84	55	40	69	40	45	20	45	30	55
Mountain.....	43	61	69	26	34	17	9	17	9	17
Pacific.....	5	41	2	14	0	19	5	10	9	5

## PNEUMONIA DEATH RATES

91 cities.....	193	180	167	171	151	155	124	161	106	138
New England.....	225	156	166	127	192	173	129	144	147	132
Middle Atlantic.....	243	220	203	223	186	168	162	180	128	165
East North Central.....	119	125	113	120	79	118	74	127	72	98
West North Central.....	239	178	204	150	189	253	143	245	143	230
South Atlantic.....	272	263	235	222	204	200	167	188	104	168
East South Central.....	201	191	194	172	201	178	194	293	113	127
West South Central.....	199	211	172	248	205	169	91	173	101	145
Mountain.....	138	131	121	167	129	191	86	113	112	104
Pacific.....	72	98	88	53	72	60	56	67	51	46

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Columbia, S. C., and Montgomery, Ala., not included.

<sup>3</sup> Barre, Vt., and Raleigh, N. C., not included.

<sup>4</sup> Barre, Vt., not included.

<sup>5</sup> Columbia, S. C., not included.

<sup>6</sup> Raleigh, N. C., not included.

<sup>7</sup> Montgomery, Ala., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended April 16, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended April 16, 1932, as follows:

Provinces	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....						
Nova Scotia.....		19				2
New Brunswick.....						3
Quebec.....				1		16
Ontario.....	2	113	1	1	2	3
Manitoba.....	1				1	3
Saskatchewan.....					1	1
Alberta.....						2
British Columbia.....	1					
Total.....	4	132	1	2	4	27

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended April 16, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended April 16, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	28	Poliomyelitis.....	1
Diphtheria.....	21	Puerperal fever.....	3
Erysipelas.....	6	Scarlet fever.....	73
German measles.....	21	Tuberculosis.....	76
Measles.....	256	Typhoid fever.....	16
Ophthalmia neonatorum.....	2	Whooping cough.....	55

### CUBA

*Habana—Communicable diseases—Four weeks ended April 23, 1932.*—During the four weeks ended April 23, 1932, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	2		Scarlet fever.....	6	1
Diphtheria.....	10	4	Tuberculosis.....	58	9
Malaria.....	6		Typhoid fever.....	21	6
Measles.....	20				

## DENMARK

*Communicable diseases—February, 1932.*—During the month of February, 1932, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	6	Mumps.....	220
Chicken pox.....	66	Paratyphoid fever.....	13
Diphtheria and croup.....	246	Scabies.....	922
Erysipelas.....	235	Scarlet fever.....	149
German measles.....	3	Syphilis.....	79
Gonorrhea.....	780	Typhoid fever.....	8
Influenza.....	49, 583	Undulant fever (Hac. abort Bang).....	47
Lethargic encephalitis.....	11	Whooping cough.....	3, 075
Measles.....	2, 828		

## PORTO RICO

*Infant mortality—1930 and 1931.*—Information published by the department of health of Porto Rico, giving the number of deaths of children under 1 year of age, from the principal causes of death, reported on the island during the years 1930 and 1931, together with the percentages which these deaths were of the total infant mortality, is shown in the following table:

Cause of death	1931		1930	
	Deaths	Per cent of total	Deaths	Per cent of total
All causes.....	8, 529	100 0	6, 878	100.0
Bronchitis, bronchopneumonia, and pneumonia.....	1, 544	18. 10	1, 302	18. 93
Congenital debility.....	1, 016	18. 95	1, 305	18. 97
Congenital malformations.....	106	1. 24	85	1. 24
Diarrhea and enteritis.....	2, 002	30. 51	2, 246	32. 65
Diphtheria.....	10	. 12	9	. 13
Influenza.....	41	. 48	15	. 22
Malaria.....	512	6. 00	270	3. 93
Nephritis, acute.....	112	1. 31	104	1. 51
Syphilis.....	190	2. 23	110	1. 60
Tetanus.....	332	3. 89	378	5. 50
Tuberculosis.....	50	. 59	36	. 52
Whooping cough.....	119	1. 40	56	. 81
All other causes.....	1, 295	15. 18	962	13. 99

## TRINIDAD

*Port of Spain—Vital statistics—March, 1931, 1932.*—The following statistics for the months of March, 1931 and 1932, are taken from a report issued by the public health department of Port of Spain, Trinidad:

	March, 1931	March, 1932		March, 1931	March, 1932
Number of births.....	190	177	Deaths under 1 year.....	16	12
Birth rate per 1,000 population.....	32. 6	29. 6	Deaths under 1 year per 1,000 births.....	84. 2	67. 8
Number of deaths.....	94	83			
Death rate per 1,000 population.....	16. 1	13. 9			

## YUGOSLAVIA

*Communicable diseases—February, 1932.*—During the month of February, 1932, certain communicable diseases were reported in Yugoslavia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	20	1	Poliomyelitis.....	3	—
Cerebrospinal meningitis.....	11	5	Rabies.....	1	1
Diphtheria and croup.....	633	93	Scarlet fever.....	498	47
Dysentery.....	18	1	Sepsis.....	15	6
Erysipelas.....	157	16	Tetanus.....	13	5
Measles.....	1, 129	6	Typhoid fever.....	138	20
Paratyphoid fever.....	7	—	Typhus fever.....	25	2





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec 13, 1931- Jan. 9, 1932	Week ended—												
				January, 1932			February, 1932			March, 1932			April, 1932			
				16	23	30	6	13	20	27	5	12	19	26	2	9
Indo-China (see also table below):																
Pnompenh.....	4				1	1									1	
Saigon and Cholon.....				1	1											
Iraq:		P	2		1									1		
Amara.....	5	3	2													
Amara Province.....	3	4	2													
Basra.....	35	3														
Basra Province.....	24	2														
Basra.....	78															
Basra Province.....	36															
Basra Province.....	10															
Diwanlyah Province.....	5															
Diwanlyah Province.....	23															
Diwanlyah Province.....	15															
Kut Province.....	20															
Kut Province.....	14															
Muntadq Province.....	68	2														
Muntadq Province.....	51	3														
Nasiriyah.....	24	8														
Nasiriyah.....	18	7														
Nasiriyah.....	2															
Japan: Taiwan—Kelung.....																
Persia:																
Abadan.....	3	1														
Ahvaz.....	103	47														
Ahvaz.....	98	39														
Khorrarnabad.....		159	8													
Khorrarnabad.....		115														
Philippine Islands: † Capiz Province.....	12	27	26													
Philippine Islands: † Capiz Province.....	9	19	19													
Philippine Islands: † Capiz Province.....																









Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932	Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932
British East Africa (see also table above): Kenya.....	C	14	64	44	41	17	33	20							
Ecuador:															
Province—															
Chimborazo.....	C	13	2	8		8	13								
Loja.....	C	4	11	2		11							1		
Indo-China.....	C	4	3			16	1						6		
Madagascar (see also table above):	D	4	1		9	9	1	12							1
Ambatolampy Province.....					5			6							
Pern—Continued.															
Departments—Continued.															
Lambayeque.....	C								1						
Libertad.....	D														
Lima.....	C														
Plague-infected rats	D														
Lima.....	C														
Piura.....	D														
Senegal:															
Bao!.....	D	1	8	39	142	166									
Dakar.....	C	19	5	37	121	152			13	6	2				
Diourbel.....	D	19	17	27	56	53			8	2					
Louga.....	D	19	17	27	51	51			45	4					2
Rufisque.....	D			4					31	4					1
Thies.....	D								13						
Yombel.....	D								5						
Senegal:															
Bao!.....	D	14	18	10	14	15			10	1	5				
Dakar.....	D	12	16	9	14	15			1	19					
Diourbel.....	D	12	13	25	30	13			4	2	10				
Louga.....	D	11	11	25	29	13			1	7	12				
Rufisque.....	D	65	120	186	248	203				1	1				
Thies.....	D	63	117	178	241	196				1	2				
Yombel.....	D	2	8	27	21	11	2		12	7	16				
Departments—	D	2	7	11	9	8	2		8	5	7				
Caute.....	D														
Cajamarca.....	C			14		3									9
	D			6											5

1 Reports incomplete.













## TYPHUS FEVER

Place	Oct. 18- Nov. 14, 1931	Nov. 19- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Week ended—													
				January, 1932				February, 1932				March, 1932				April, 1932	
				16	23	30		6	13	20	27	5	12	19	26	2	9
Algeria:																	
Algiers.....	3	3	4	1							3				7		8
Constantine Department.....	38	5	5	2				2	1					7			
Gerville.....		1															
Oran.....	2	4	22	16	12	13		3	1	29	36		1	12	10		
Bulgaria.....	D		3	2	3	1		3	1	3	3		1	1			
Chile:																	
Antofagasta.....	1	3	1			1											
Santiago.....	34																
China:																	
Hankow.....			4								2			1			
Swatow.....																	
Chosen (see table below).....										1							
Colombia: Cali.....	D																
Czechoslovakia (see table below).....																	
Egypt:																	
Alexandria.....	1		5							1	63	7				46	
Beheira.....		1	7														
Cairo.....	1		1							12							
Gharbiéh.....	1																
Provinces.....			11	4	13	26		25	26	11	101	192	148	164	200		
Greece (see table below).....			2		2			1	1	2	5	17	15	17			
Irish Free State.....																	
Donegal County—Stranorlar.....		2															
Limerick County—Limerick.....		1	1														
Waterford County—Lismore.....																	
Latvia (see table below).....																	
Lithuania (see table below).....																	
Mexico:																	
Guadalajara.....	D		1														
Mexico City, including municipalities in Federal District.....	16	22	11	5	10	4		6	7	8	3	2	2	3			
San Luis Potosí.....	4	4	6	1	4	2		2	1	4	3	4	2	1			
Torreón.....	3																
	6																
	1	17	9		2	1		3	7	19	19	14	3	21	5	9	7
Morocco.....	D	2	1									6	2	4		1	

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place	Oct. 18- Nov. 11, 1931	Nov. 15- Dec. 11, 1931	Dec. 13, 1931- Jan. 9, 1932	Week ended—													
				January, 1932			February, 1932			March, 1932			April, 1932				
				16	23	30	6	13	20	27	5	12	19	26	2	9	16
Palestine.....	3	1	4	1	1		1										
Paraguay: Asuncion.....																	
Peru.....	20	193	103	69	61	74	61	49	41	58	67	74	65	52	64	85	95
Poland.....	3	10	14	4		4	2	2	3	7	9	5	5	4	8	5	10
Portugal: Oporto.....																	
Rumania.....	28	68	108	(2	83	68	51	77	74	64	49						
Tunisia: Tunis.....	9	10	3	1	8	1	1	13	6	11	8	14	26	10	31	32	6
Turkey (see table below).	3	2	2					1		2		2		3	3	4	
Union of South Africa:																	
Cape Province.....																	
Natal.....	P	P	P	P	P		P	P	P	P	P	P	P	P			
Orange Free State.....																	
Transvaal.....	P	P	P	P	P	P	P	P	P	P	P	P	P				
Venezuela: Caracas (see table below).																	
Yugoslavia (see table below).																	
On vessel: At Antofagasta, from Iquique and points north.....	C		1														

<sup>1</sup> Typhus fever was reported in Peru from May to November, 1931, 133 new cases being reported during the months of October and November. The disease did not spread to the coastal region.



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place	Oct, 18- Nov. 1931	Nov. 15- Dec. 1931	Dec. 12, Jan. 9, 1932	Week ended—											
				January, 1932			February, 1932			March, 1932			April, 1932		
				16	23	30	6	13	20	27	5	12	19	26	2, 9
Brazil:															
Alagoas State—															
Maceio.....	1														
Utinga.....	3														
Bahia State.....	2														
Sobral.....	1		2												
Espirito Santo State <sup>1</sup> .....	1														
Santa Teresa (about 56 miles from Victoria).....											1		2		1
Pernambuco State—															
Pau d'Alho.....	1														
Dahomey: Porto Novo.....	1														
Gold Coast:															
Arudua.....														1	
Cape Coast.....														1	1
Dagomba District.....												P			
Selaga.....															
Tunale.....	1														
Yapei.....	1	3													
Ivory Coast: Tehin.....	1												1		
Nigeria.....	2														
Sudan (French): Macina—Kayo Circle.....	1	2							1						
Togo (French): Atakpame—Anie Circle.....	1	2													
Upper Volta: Dedougou.....	1														
	2														

<sup>1</sup> During the 2 weeks ended Apr. 22, 1932, a number of cases of suspected yellow fever were reported in the interior of the State.

UNITED STATES TREASURY DEPARTMENT

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## SPECIAL ARTICLES

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Prevalence of Communicable Diseases in the United States

Trachoma Virulence in Different Areas of the United States



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

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NO. 21

## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES<sup>1</sup>

March 27–April 23, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports, under the section entitled "Prevalence of Disease."

*Influenza.*—For the four weeks ended April 23 there were 21,742 cases of influenza reported, approximately 15,000 less than were reported for the preceding 4-week period. Compared with preceding years the current figure was 1.8 times the figure for the same period in 1931, 3.3 times the figure in 1930, and 3.9 times the number of cases reported in 1929. In four of the six geographic areas the current incidence was considerably in excess of the incidence reported for the same period in the three preceding years. In the West North Central States the number of cases reported represented only about 85 per cent of the number reported for the same period last year, but it was twice the number reported in 1930 and 1.4 times the number in 1929. The Mountain and Pacific States reported a decrease in the number of cases from last year's figure of about 45 per cent. It was, however, 2.6 times the number reported in 1930 and very closely approximated the figure for 1929. The peak has apparently been passed in all sections of the country. While in the South Atlantic States an increase of approximately 2,000 cases over the preceding 4-week period was reported for the current period, the peak was reached during the week ended April 9, several weeks later than in any other geographic area, and the following 2-week period showed a considerable decline in the number of cases.

*Typhoid fever.*—During the current 4-week period 664 cases of typhoid fever were reported, a figure approximately 30 per cent in excess of last year's figure for the same period. While the figure

<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The numbers of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

was in excess of that for last year, it closely approximated the incidence for the same period in 1930, and represented a decrease of approximately 17 per cent from the incidence for the corresponding period of 1929. All areas except the New England and Middle Atlantic, where the incidence was the lowest in four years, contributed to the increase over last year. The disease seemed to be most prevalent in the South Atlantic and South Central States.

*Scarlet fever.*—The reported current incidence (24,560 cases) of scarlet fever was about 11 per cent in excess of that of last year. This excess was attributable to an increase in the number of cases reported in the New England and Middle Atlantic States, where the disease has been unusually prevalent for several months. All other areas either approximated last year's incidence or showed decreases ranging from 10 per cent in the South Atlantic States to 40 per cent in the West North Central States. For this period in 1930 and 1929 the cases totaled 19,664 and 20,428, respectively.

*Diphtheria.*—For the country as a whole the current diphtheria incidence (3,248 cases) was the lowest for this 4-week period in four years. A comparison of geographic areas shows that a similar situation existed in the New England and Middle Atlantic, East and West North Central, and South Atlantic States, while in the Mountain and Pacific and South Central States the incidence was the highest in four years. The usual seasonal decline, however, was apparent in all areas.

*Measles.*—The number of cases of measles reported for the 4-week period ended April 23 was 61,868. This was approximately 12,500 more than were reported for the preceding 4-week period, but represented only a normal increase for this season of the year. For this same period in the years 1931, 1930, and 1929 the number of cases totaled 80,856, 68,364, and 56,995, respectively. A comparison of geographic areas shows that only one area, the East North Central, reported a larger number of cases during the current period than were reported for the corresponding four weeks of last year.

*Smallpox.*—For smallpox the comparison of the incidence for the current period with that for the same period in previous years continued very favorable. The number of cases reported (1,530) was only 38 per cent, 24 per cent, and 37 per cent of the cases reported for the corresponding period in the years 1931, 1930, and 1929, respectively. All geographic areas, except the New England and Middle Atlantic States, showed smaller numbers of cases as compared with the preceding three years. In the excepted group the number of cases (41) was 2.6 times the number reported for the same period last year. Of the total number reported, 15 cases occurred in Vermont and 25 in New York. In 1930, this group of States reported 37 cases for this period, and in 1929 the number of cases totaled 74.

***Meningococcus meningitis.***—The New England and Middle Atlantic and East North Central areas seemed mostly responsible for a rather sharp upward turn in the incidence of meningococcus meningitis during the four weeks ended April 23. In the former group the number of cases increased from 70 during the four weeks ended March 26 to 102 during the current period, and in the latter group the number increased from 96 to 113. Compared with previous years, however, these regions, with all others, still maintained a satisfactory low level, the incidence being the lowest in four years in all regions except the South Atlantic.

***Poliomyelitis.***—The incidence of poliomyelitis for the current period was slightly below the incidence for the same period last year, but was about 20 per cent in excess of the incidence reported in the same period in 1930 and 1929. The cases (79) reported for the four weeks ended April 23 were distributed among the various geographic areas as follows: New England and Middle Atlantic, 22 cases; South Atlantic, 7 cases; East North Central, 17 cases; West North Central, 7 cases; South Central, 10 cases; and Mountain and Pacific, 16 cases.

***Mortality, all causes.***—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, dropped from 13.5 per thousand population (annual basis) for the four weeks ended March 26, to 12.5 for the current 4-week period. The current rate was approximately the same as that for the corresponding period in 1931, but was considerably below the average rate (13.8) for the years 1927 to 1930, inclusive.

## COMPARISON OF TRACHOMA VIRULENCE IN DIFFERENT SECTIONS OF THE UNITED STATES

By C. E. RICE, *Passed Assistant Surgeon*, J. E. SMITH, *Acting Assistant Surgeon*, and ROBERT SORY, *Acting Assistant Surgeon*, United States Public Health Service

The question of virulence in trachoma has never received the attention it deserves. In reports on the prevalence of trachoma in different localities and among different races, there is usually no mention made by authors of the amount of damage done by the disease. The mere statement that a certain percentage of the people in a particular area have trachoma has usually been considered all that is necessary.

The virulence of trachoma can not be measured by the number of fatalities. The index of trachoma virulence is based, first, on the amount of blindness (light perception or less) caused by trachoma, and, second, on the number of cases observed with distorted lids and resulting entropion. The blindness here considered is recorded

as so many blind eyes. A case with blindness in each eye is recorded as two blind eyes, and one with blindness in only one eye is recorded as one blind eye. In considering entropion, no separation is made of the cases with entropion in both eyes and those with entropion in only one eye.

It has been noted by officers of the United States Public Health Service engaged in trachoma eradication work that there is considerable difference in the amount of damage caused by trachoma in the different sections of the country where their work has been conducted. This study is an endeavor to determine whether this is actually the case.

The data supplied by the different medical officers in charge of trachoma control measures of the United States Public Health Service, and published in the annual reports of the Surgeon General, have been utilized in this study.

The total number of cases reported in each of the six areas, except Georgia, refers to the cases passing through the dispensaries of the many temporary field hospitals that were established in the different infected areas during the first six years of trachoma work in each area. The 708 cases reported in Georgia comprise the total number of cases seen in that area in 1931. The areas are arranged in order of degree of virulence.

State	Number of cases	Number of entropions to each 100 cases of trachoma	Number of blind eyes to each 100 cases of trachoma
Missouri.....	1,609	43.4	8.2
Arkansas.....	1,037	29.7	7.4
Kentucky.....	5,946	10.8	5.8
Tennessee.....	1,825	6.1	1.2
South Georgia.....	708	1.1	.28

While the economic status of the people living in these different trachoma regions is very much the same, there are minor differences in the dietary habits. No reason can be advanced as to why there should be this difference.

#### CONCLUSION

Analysis of the collected data indicates a marked difference in the virulence of trachoma in different sections of the United States, as measured by the frequency of entropion and blindness caused by this disease.

#### DEATH RATES IN A GROUP OF INSURED PERSONS

##### RATES FOR PRINCIPAL CAUSES OF DEATH FOR MARCH, 1932

The accompanying table is taken from the Statistical Bulletin for April, 1932, issued by the Metropolitan Life Insurance Co., and presents the mortality record of the industrial insurance department

of the company for March, 1932, as compared with that for the preceding month and for March, 1931. It also presents a comparison of the cumulative death rates for January-March for the two years. The rates in this group of insured persons in recent years are based on numbers varying between 17,000,000 and 19,000,000. The annual general death rate for this group in the past few years has averaged about 72 per cent of the death rate for the registration area of the United States.

Although the death rate for these policyholders for March, 1932, rose sharply from that for February and was also slightly higher than the rate for March of last year, the cumulative rate for the three-month period January-March was lower this year than it was in 1931.

The Bulletin states:

The death rate of the industrial policyholders rose sharply, in March, to 10.4 per thousand, as compared with 8.8 in February. The March mortality rate was nevertheless well below the average for that month during the last 10 years. Among insured Canadians, in fact, the March death rate was lower than in 1931; but throughout the United States an increase was in evidence.

Increased mortality in March, as compared with February, was observed for every cause of death listed in the table, except typhoid fever, diphtheria, diarrheal diseases, puerperal conditions, suicides, and homicides. Comparison with March a year ago shows marked drops for influenza, tuberculosis, and pneumonia, which were slightly more than counterbalanced by increases for several other important causes of death.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial insurance department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed *				
	March, 1932	Febru- ary, 1932	March, 1931	Cumulative January-March	
				1932	1931
Total, all causes.....	1,043.5	878.6	1,022.2	938.6	1,019.8
Typhoid fever.....	.9	1.5	.9	1.3	1.1
Measles.....	3.6	2.4	5.5	2.8	3.8
Scarlet fever.....	4.9	3.6	4.3	3.8	4.1
Whooping cough.....	4.6	3.4	3.8	3.6	4.2
Diphtheria.....	4.1	6.5	5.0	5.6	5.9
Influenza.....	43.6	22.5	52.5	28.4	47.9
Tuberculosis (all forms).....	76.9	70.0	87.6	72.9	83.4
Tuberculosis of respiratory system.....	69.0	63.0	79.6	65.2	74.6
Cancer.....	93.2	86.9	84.1	89.9	84.8
Diabetes mellitus.....	27.6	22.3	24.0	24.6	24.6
Cerebral hemorrhage.....	77.6	61.7	64.8	68.6	68.2
Organic diseases of heart.....	188.7	169.1	171.3	170.1	178.6
Pneumonia (all forms).....	123.7	84.3	126.7	97.0	131.6
Other respiratory diseases.....	13.3	12.3	13.3	11.7	14.1
Diarrhea and enteritis.....	7.5	7.8	9.5	8.2	10.4
Bright's disease (chronic nephritis).....	78.9	66.0	74.0	74.6	75.2
Puerperal state.....	11.3	11.4	12.4	11.4	11.9
Suicides.....	9.4	10.4	9.6	9.9	9.1
Homicides.....	6.3	6.3	7.0	6.5	6.6
Other external causes (excluding suicides and homi- cides).....	50.8	44.0	47.3	50.3	52.7
Traumatism by automobiles.....	15.8	15.7	16.4	15.4	15.4
All other causes.....	216.5	194.5	218.6	197.1	208.6

\* All figures in this table include insured infants under one year of age. The rates for 1932 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.



## COURT DECISION RELATING TO PUBLIC HEALTH

*City held liable for sewage pollution of stream.*—(Oklahoma Supreme Court; *Oklahoma City v. West*, 7 P. (2d) 888; decided Nov. 10, 1931.) In an action brought by a riparian owner against a city to recover damages resulting from the discharge of unpurified sewage into a stream, the judgment was in favor of the plaintiff. Certain points decided by the supreme court are well set forth in the official syllabi prepared by the court, and those portions of such syllabi which are of interest from a public health standpoint are as follows:

In a suit to recover damages caused by the discharge of unpurified sewage into a water course to the damage of a riparian owner, a contention that, since a sewer system is a permanent structure, in the absence of an allegation of negligence in the adoption of the plan of construction of the sewer system or in a failure to construct the system in accordance with the plan adopted, the nuisance should be considered permanent, is unsound, for the damages in such case are not caused by the so-called permanent structure but by the manner of its use. *City of Mangum v. Sun Set Field*, 73 Okl. 11, 174 P. 501, to the contrary, is overruled.

Judicial notice is taken of the fact that sewage can be easily and successfully purified by the use of modern appliances, so that a nuisance, caused by the discharge of unpurified sewage into a water course, is, as has heretofore been declared by this court, a temporary nuisance within the rule that a nuisance is temporary that can be abated by the expenditure of money or labor.

Where work is required or authorized by the legislature and a nuisance is not the necessary result of the performance of the work, it can not be contended that the nuisance is legalized and that the right to recover damages for the nuisance is based upon a constitutional provision that private property shall not be taken or damaged for public use without just compensation, but the damages are recoverable for a common law tort which has not been legalized, and, if the commission of the nuisance is unnecessary, it is unnecessary to allege that there was negligence in the adoption of the plan for the work or in the construction of the work in accordance with the plan adopted, as the burden of showing necessity is upon the defendant, and an allegation that the nuisance can be abated by the expenditure of money or labor indicates that the commission of the nuisance was unnecessary and that its continuation is unnecessary.

It is not within the power of a municipality, guilty of the commission of a nuisance by discharging unpurified sewage into a water course to the damage of a riparian owner, to elect to continue the nuisance and require the nuisance to be held to be permanent. An indication to the contrary in *Page v. Oklahoma City*, 129 Okl. 28, 263 P. 448, is disapproved.

## DEATHS DURING WEEK ENDED APRIL 30, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended April 30, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Apr. 30, 1932	Correspond- ing week, 1931
Policies in force.....	73, 510, 439	75, 137, 074
Number of death claims.....	14, 578	15, 360
Death claims per 1,000 policies in force, annual rate..	10.4	10.7
Death claims per 1,000 policies, first 17 weeks of year, annual rate.....	10.6	11.1

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 30, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Apr. 30, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 17 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	8, 143	11.0	635	4 53	12.0	692	12.5	13.7
Akron.....	33	6.5	1	12	6.1	7	7.5	8.4
Albany.....	28	11.2	1	20	14.1	2	14.9	15.6
Atlanta.....	80	14.8	4	39	15.2	12	14.2	16.1
White.....	42	11.7	2	29	13.0	7	11.2	12.9
Colored.....	38	20.8	2	57	19.6	5	20.2	22.3
Baltimore.....	212	13.5	12	42	14.7	20	14.7	17.0
White.....	162	12.6	7	32	13.0	12	13.6	15.6
Colored.....	50	17.4	5	80	22.4	8	19.7	25.5
Birmingham.....	58	10.9	7	73	15.5	6	12.1	15.5
White.....	27	8.2	4	66	10.3	1	9.9	12.1
Colored.....	31	15.4	3	81	23.9	5	15.7	21.1
Boston.....	247	16.4	25	78	15.7	26	15.8	18.2
Bridgeport.....	30	10.6	0	0	9.9	0	12.1	12.8
Buffalo.....	115	10.2	12	58	12.6	8	14.0	15.1
Cambridge.....	37	16.9	6	124	13.7	0	14.5	13.7
Camden.....	37	10.2	2	35	16.7	6	16.2	17.5
Canton.....	18	8.7	3	75	12.2	5	10.3	11.3
Chicago.....	670	9.9	46	45	10.9	62	10.9	11.8
Cincinnati.....	131	14.8	7	45	14.5	5	16.6	18.1
Cleveland.....	201	11.4	14	45	11.3	10	12.1	12.6
Columbus.....	72	12.6	3	30	10.8	3	14.6	14.9
Dallas.....	47	8.7	5	-----	13.2	8	11.4	12.7
White.....	39	8.7	4	-----	12.5	8	10.5	11.1
Colored.....	8	8.0	1	-----	16.5	0	15.7	19.9
Dayton.....	37	8.1	4	57	6.8	3	11.8	11.8
Denver.....	55	0.8	6	59	13.9	4	16.1	15.6
Des Moines.....	34	12.2	1	17	13.0	1	12.6	12.0
Detroit.....	251	7.6	23	41	8.5	35	8.5	9.7
Duluth.....	28	14.4	4	116	10.2	2	10.8	11.6
El Paso.....	25	12.2	1	-----	14.9	7	14.3	17.5
Eric.....	23	10.1	5	106	8.0	5	12.3	11.8
Evansville.....	21	10.4	2	67	12.0	2	10.2	12.1
Fall River.....	21	9.5	1	27	10.0	4	13.3	13.5
Flint.....	21	0.5	8	117	7.3	2	8.8	7.9
Fort Wayne.....	19	8.2	0	0	7.9	0	10.8	11.7
Fort Worth.....	33	10.1	2	-----	14.3	1	10.8	12.4
White.....	28	10.2	1	-----	14.5	1	10.5	12.0
Colored.....	5	9.8	1	-----	13.4	0	12.9	14.4
Grand Rapids.....	34	10.2	2	34	7.3	2	9.7	9.8
Houston.....	72	11.6	9	-----	10.1	4	11.2	11.7
White.....	48	10.5	6	-----	11.3	4	10.5	10.8
Colored.....	24	14.6	3	-----	6.9	0	13.0	14.3
Indianapolis.....	115	16.1	11	89	12.7	4	13.9	15.1
White.....	92	14.7	7	64	12.4	3	13.4	14.6
Colored.....	23	26.1	4	274	15.0	1	17.3	18.7
Jersey City.....	72	11.7	9	75	12.1	11	12.0	13.6
Kansas City, Kans.....	25	10.6	1	22	10.6	4	13.0	15.2
White.....	22	11.5	1	27	12.1	4	12.7	14.0
Colored.....	3	6.6	0	0	4.4	0	14.3	20.1
Kansas City, Mo.....	100	12.6	4	45	12.8	11	13.3	15.1
Knoxville.....	82	15.0	3	76	9.5	1	13.1	14.3
White.....	22	12.3	1	28	10.8	1	11.9	13.2
Colored.....	10	28.6	2	539	2.9	0	19.0	10.6
Long Beach.....	37	12.0	1	26	7.2	1	10.1	10.6
Los Angeles.....	239	9.0	22	65	10.5	20	11.3	11.5
Louisville.....	76	12.9	12	110	8.8	3	14.4	16.8
White.....	59	11.8	10	104	8.2	3	12.9	15.1
Colored.....	17	18.6	2	149	12.0	0	22.5	26.2
Lowell.....	25	13.0	5	131	6.2	2	14.7	14.1
Lynn.....	15	7.6	2	57	10.2	0	11.9	11.8
Memphis.....	63	12.5	5	54	13.3	7	17.0	17.8
White.....	33	10.6	3	51	9.1	4	13.6	14.3
Colored.....	30	15.6	2	60	20.0	3	23.4	22.6
Miami.....	26	13.3	1	38	8.8	1	12.7	14.1
White.....	21	12.4	0	0	6.6	1	11.3	12.3
Colored.....	5	16.6	1	101	16.5	0	15.8	17.3

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended April 30, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended Apr. 30, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 17 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Milwaukee	124	10.8	11	52	9.6	11	9.6	10.5
Minneapolis	100	10.9	6	39	10.3	6	11.3	12.1
Nashville <sup>4</sup>	47	15.7	4	60	12.7	3	15.4	18.2
White	28	12.8	3	59	10.6	2	14.1	15.7
Colored	19	23.2	1	62	18.3	1	18.0	24.7
New Bedford <sup>5</sup>	24	11.1	1	29	14.8	1	13.5	13.5
New Haven	44	14.1	2	40	15.7	5	13.7	13.7
New Orleans <sup>6</sup>	137	15.1	14	80	17.1	18	16.0	18.6
White	84	13.0	7	61	12.8	10	13.7	15.3
Colored	53	20.2	7	114	27.5	8	21.8	27.6
New York	1,526	11.1	112	50	11.3	128	11.9	13.2
Bronx Borough	221	8.4	12	35	8.3	8	8.8	9.5
Brooklyn Borough	517	10.1	46	51	9.7	44	11.1	12.2
Manhattan Borough	582	17.1	45	34	18.3	50	18.3	20.1
Queens Borough	162	7.0	1	20	6.9	14	7.6	8.5
Richmond Borough	44	13.7	1	06	13.4	3	14.4	14.2
Newark, N. J.	109	12.7	12	06	11.6	9	12.0	13.5
Oakland	54	9.4	5	43	9.8	2	11.3	11.6
Oklahoma City	54	13.7	1	14	15.1	3	10.7	12.4
Omaha	54	12.9	5	58	13.1	3	14.7	14.4
Paterson	29	10.9	1	18	15.2	4	13.8	16.0
Peoria	21	9.9	3	85	14.9	0	14.3	13.8
Philadelphia	514	13.6	37	57	13.9	40	14.5	15.9
Pittsburgh	146	11.2	17	78	14.3	18	14.5	17.7
Portland, Oreg.	79	13.3	6	77	10.0	0	12.4	12.5
Providence	74	15.1	5	48	10.8	3	15.6	15.0
Richmond <sup>6</sup>	39	11.0	4	50	15.0	2	14.8	17.9
White	24	9.5	2	45	13.1	2	12.4	15.3
Colored	15	14.9	2	42	19.7	0	20.7	24.5
Rochester	83	13.0	4	38	13.8	6	12.9	13.8
St. Louis	245	15.4	13	46	14.7	12	14.8	17.9
St. Paul	58	10.8	3	32	11.1	1	11.4	11.7
Salt Lake City <sup>7</sup>	31	11.2	3	47	14.2	5	11.5	13.0
San Antonio	59	12.5	11	—	10.5	19	14.7	15.7
San Diego	46	14.7	3	—	16.0	0	16.0	15.1
San Francisco	156	12.3	9	02	12.8	6	13.5	14.1
Schenectady	23	12.5	1	29	11.4	4	11.9	12.1
Seattle	91	12.6	4	40	11.8	3	12.4	12.9
Somerville	27	13.3	7	282	9.0	2	10.7	11.0
South Bend	18	8.5	0	0	7.7	0	8.2	9.2
Spokane	25	11.2	1	27	13.9	2	12.6	13.3
Springfield, Mass.	38	12.9	2	34	15.4	6	12.2	13.6
Syracuse	46	11.1	3	39	13.2	7	12.6	13.0
Tacoma	22	10.6	3	83	11.6	1	12.4	14.5
Tampa <sup>8</sup>	24	11.6	2	57	13.4	6	12.4	13.9
White	20	12.3	2	70	10.7	4	12.0	12.6
Colored	4	9.2	0	0	23.5	2	14.2	18.5
Toledo	53	9.2	3	33	9.1	1	12.7	13.3
Trenton	39	16.4	6	119	13.9	2	17.8	19.0
Utica	38	19.3	3	85	12.7	0	17.3	16.3
Washington, D. C. <sup>9</sup>	171	15.1	4	22	16.6	20	17.6	18.2
White	103	15.1	0	0	12.6	7	15.8	15.5
Colored	68	26.0	4	71	27.0	13	22.3	25.2
Waterbury	13	6.7	2	66	12.4	6	10.3	11.2
Wilmington, Del. <sup>7</sup>	29	14.2	3	68	14.7	4	17.9	16.7
Worcester	56	14.7	2	28	11.4	1	13.5	15.1
Yonkers	23	8.5	1	26	7.5	5	8.7	9.9
Youngstown	36	10.7	4	65	10.9	0	10.8	11.6

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 59; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

**Reports for Weeks Ended May 7, 1932, and May 9, 1931**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 7, 1932, and May 9, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931
<b>New England States</b>								
Maine.....	3	1	44	3	290	4	0	0
New Hampshire.....		4			7	46	1	0
Vermont.....					190	1	0	0
Massachusetts.....	23	32	5	7	949	498	2	4
Rhode Island.....	5	8			92	99	0	0
Connecticut.....	3	9	20	7	231	582	0	1
<b>Middle Atlantic States</b>								
New York.....	96	134	116	111	2,415	2,621	6	7
New Jersey.....	25	48	14	16	833	1,015	3	4
Pennsylvania.....	69	64			1,871	3,952	2	4
<b>East North Central States:</b>								
Ohio.....	17	28	12	24	1,555	575	1	2
Indiana.....	32	23	36	6	128	1,065	3	9
Illinois.....	65	124	47	6	1,318	1,831	10	18
Michigan.....	12	9	9		2,441	95	9	3
Wisconsin.....	7	13	48	14	2,310	620	2	2
<b>West North Central States:</b>								
Minnesota.....	4	5	2	3	38	188	1	2
Iowa.....	12	6			4	73	1	1
Missouri.....	24	28	6	8	110	647	1	8
North Dakota.....	6	5			40	70	0	1
South Dakota.....	5	16			6	37	1	0
Nebraska.....	15	9			3	3	0	1
Kansas.....	11	10	4	4	380	96	0	2
<b>South Atlantic States:</b>								
Delaware.....	1				1	193	0	0
Maryland <sup>1</sup> .....	15	11	14	14	69	1,246	0	1
District of Columbia.....	11	8	2	4	19	299	1	0
Virginia <sup>2</sup> .....								
West Virginia.....	7	4	50	38	301	95	0	1
North Carolina.....	4	13	291	97	869	656	3	5
South Carolina.....	3	13	892	401	132	181	4	3
Georgia <sup>3</sup> .....	8	9		89	57	151	2	2
Florida <sup>3</sup> .....	5	6	2	2	8	234	0	3

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended May 7, 1932, 8 cases: 1 case in Virginia, 1 case in Georgia, 1 case in Florida, 1 case in Alabama, and 4 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended May 7, 1932, and May 9, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931
<b>East South Central States:</b>								
Kentucky.....	13	10	110	—	115	144	0	0
Tennessee.....	8	2	111	50	42	30	1	5
Alabama <sup>1</sup> .....	15	12	68	50	9	304	1	8
Mississippi.....	5	9	—	—	—	—	0	2
<b>West South Central States:</b>								
Arkansas.....	2	5	45	27	—	74	1	1
Louisiana.....	16	44	13	15	91	4	0	4
Oklahoma <sup>4</sup> .....	18	9	44	55	83	18	2	2
Texas <sup>1</sup> .....	47	23	63	50	552	114	1	0
<b>Mountain States:</b>								
Montana.....	—	2	—	—	100	14	1	0
Idaho.....	—	—	—	—	—	—	0	0
Wyoming.....	1	—	—	—	44	—	0	0
Colorado.....	9	5	—	—	124	183	0	0
New Mexico.....	5	1	—	2	35	58	0	3
Arizona.....	—	6	3	2	2	75	1	0
Utah <sup>2</sup> .....	—	5	—	1	—	6	0	1
<b>Pacific States:</b>								
Washington.....	3	8	1	5	309	165	1	2
Oregon.....	3	8	42	25	269	135	1	0
California.....	67	88	65	55	696	1,309	10	6
<b>Total.....</b>	<b>702</b>	<b>877</b>	<b>1,990</b>	<b>1,091</b>	<b>19,158</b>	<b>19,806</b>	<b>73</b>	<b>118</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931
<b>New England States:</b>								
Maine.....	1	0	20	20	0	0	2	0
New Hampshire.....	0	0	9	1	0	0	0	0
Vermont.....	0	0	4	0	1	2	0	0
Massachusetts.....	1	0	465	429	0	0	0	6
Rhode Island.....	0	0	52	70	0	0	1	1
Connecticut.....	0	0	106	47	0	0	0	0
<b>Middle Atlantic States:</b>								
New York.....	1	5	1,603	990	3	12	4	10
New Jersey.....	0	0	337	294	0	0	1	3
Pennsylvania.....	0	0	724	575	0	0	6	9
<b>East North Central States:</b>								
Ohio.....	1	2	269	341	12	37	5	14
Indiana.....	0	0	199	266	9	135	3	8
Illinois.....	0	3	312	509	6	49	7	7
Michigan.....	2	0	422	318	10	14	2	2
Wisconsin.....	1	1	63	161	0	11	9	2
<b>West North Central States:</b>								
Minnesota.....	0	1	97	87	4	10	1	1
Iowa.....	0	0	41	59	17	68	2	0
Missouri.....	0	2	52	225	6	29	3	6
North Dakota.....	0	0	8	30	0	9	0	1
South Dakota.....	0	0	4	28	0	15	0	0
Nebraska.....	0	0	15	39	20	33	0	0
Kansas.....	0	0	54	48	10	71	3	1
<b>South Atlantic States:</b>								
Delaware.....	0	0	10	21	0	0	0	0
Maryland <sup>1</sup> .....	0	0	113	68	0	0	1	1
District of Columbia.....	1	0	27	32	0	0	1	1
Virginia <sup>1</sup> .....	—	—	—	—	—	—	—	—
West Virginia.....	0	0	18	55	1	6	6	12
North Carolina.....	1	0	30	38	2	7	4	3
South Carolina.....	0	0	4	5	1	0	7	7
Georgia <sup>1</sup> .....	1	0	10	56	3	9	17	6
Florida <sup>1</sup> .....	0	1	1	10	11	3	6	4

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 7, 1932, 8 Cases: 1 case in Virginia, 1 case in Georgia, 1 case in Florida, 1 case in Alabama, and 4 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 7, 1932, and May 9, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931	Week ended May 7, 1932	Week ended May 9, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	80	55	4	24	4	1
Tennessee.....	1	1	27	20	20	2	4	5
Alabama.....	0	1	6	17	19	10	6	4
Mississippi.....	0	0	13	11	20	25	6	4
<b>West South Central States:</b>								
Arkansas.....	1	1	4	15	9	7	3	9
Louisiana.....	2	0	10	18	8	19	19	10
Oklahoma.....	0	0	16	25	23	79	3	4
Texas.....	1	3	46	51	37	35	4	5
<b>Mountain States:</b>								
Montana.....	0	0	17	38	2	1	1	2
Idaho.....	0	0	2	4	2	2	0	0
Wyoming.....	0	0	3	4	1	0	0	0
Colorado.....	0	0	34	55	1	6	1	0
New Mexico.....	0	0	15	8	0	4	0	2
Arizona.....	0	1	5	2	0	0	0	1
Utah.....	0	0	1	5	0	0	0	1
<b>Pacific States:</b>								
Washington.....	0	2	32	60	13	29	0	5
Oregon.....	0	0	6	18	10	7	0	2
California.....	2	1	162	147	21	28	6	8
	17	25	5, 548	5, 370	306	789	148	168

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 7, 1932, 8 Cases: 1 case in Virginia, 1 case in Georgia, 1 case in Florida, 1 case in Alabama, and 4 cases in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Dipha- theria	Influa- enza	Ma- laria	Mea- sles	Pel- lagra	Poli- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<b>February, 1932</b>										
Hawaii Territory.....		15			360			3	0	5
<b>March, 1932</b>										
Colorado.....	4	28	6		552		0	173	3	4
Delaware.....		16	4		4		0	75	0	1
Kansas.....	3	60	50		1, 038		1	238	29	5
Mississippi.....	1	55	5, 322	1, 126	30	385		58	164	26
<b>April, 1932</b>										
Arizona.....	5	12	108		9		0	40	2	5
Connecticut.....	3	26	58		636		1	431	1	3
District of Columbia.....	3	33	10		38		1	113	0	1
Florida.....	2	37	20	7	38	5	0	19	1	23
Indiana.....	43	131	548		414		3	719	48	6
New Hampshire.....		4					1	149	0	5
Nebraska.....	5	22	19		11		0	126	48	1
New Mexico.....	1	55	60		262		0	50	1	9
North Dakota.....	1	14	80		181		1	73	23	4
Vermont.....		4			400		0	55	14	1

February, 1932		March, 1932	
Hawaii Territory:	Cases	Chicken pox:	Cases
Chicken pox.....	52	Colorado.....	401
Conjunctivitis (follicular).....	31	Delaware.....	27
Hookworm disease.....	53	Kansas.....	473
Leprosy.....	9	Mississippi.....	500
Mumps.....	24	Dysentery.....	
Plague.....	2	Mississippi (amebic).....	22
Tetanus.....	2	German measles.....	
Whooping cough.....	12	Kansas.....	2

		Cases			Cases
<b>Mumps:</b>			<b>Lead poisoning:</b>		
Colorado.....	338		Connecticut.....	1	
Delaware.....	48		<b>Leprosy:</b>		
Kansas.....	478		Arizona.....	1	
Mississippi.....	206		<b>Lethargic encephalitis:</b>		
<b>Ophthalmia neonatorum:</b>			Connecticut.....	1	
Mississippi.....	7		District of Columbia.....	1	
<b>Ptomaine poisoning:</b>			North Dakota.....	2	
Kansas.....	1		<b>Mumps:</b>		
<b>Puerperal septicemia:</b>			Arizona.....	11	
Mississippi.....	22		Connecticut.....	325	
<b>Rabies in animals:</b>			Florida.....	18	
Mississippi.....	10		Indiana.....	694	
<b>Scabies:</b>			Nebraska.....	216	
Kansas.....	4		New Mexico.....	69	
<b>Septic sore throat:</b>			North Dakota.....	25	
Kansas.....	5		Vermont.....	427	
<b>Tetanus:</b>			<b>Ophthalmia neonatorum:</b>		
Kansas.....	1		Connecticut.....	1	
<b>Trachoma:</b>			<b>Paratyphoid fever</b>		
Kansas.....	5		Connecticut.....	5	
Mississippi.....	4		<b>Rabies in animals:</b>		
<b>Tularaemia:</b>			Connecticut.....	12	
Kansas.....	1		<b>Scabies:</b>		
Mississippi.....	1		North Dakota.....	5	
<b>Undulant fever:</b>			<b>Septic sore throat</b>		
Kansas.....	1		Connecticut.....	11	
Mississippi.....	1		New Mexico.....	1	
<b>Vincent's angina.</b>			<b>Trachoma:</b>		
Colorado.....	5		Arizona.....	13	
Kansas.....	24		Indiana.....	4	
<b>Whooping cough:</b>			New Mexico.....	1	
Colorado.....	128		North Dakota.....	1	
Delaware.....	111		<b>Tularaemia.</b>		
Kansas.....	400		Indiana.....	-1	
Mississippi.....	894		<b>Typhus fever:</b>		
<i>April, 1932</i>			Connecticut.....	1	
			Florida.....	2	
<b>Actinomycosis:</b>			<b>Undulant fever:</b>		
Connecticut.....	1		Arizona.....	1	
<b>Chicken pox:</b>			Connecticut.....	1	
Arizona.....	128		Florida.....	1	
Connecticut.....	306		Indiana.....	2	
District of Columbia.....	145		<b>Vincent's angina:</b>		
Florida.....	112		North Dakota.....	25	
Indiana.....	378		<b>Whooping cough:</b>		
Nebraska.....	165		Arizona.....	64	
New Mexico.....	67		Connecticut.....	517	
North Dakota.....	37		District of Columbia.....	111	
Vermont.....	25		Florida.....	43	
<b>Conjunctivitis:</b>			Indiana.....	545	
Connecticut.....	11		Nebraska.....	102	
New Mexico.....	13		New Mexico.....	87	
<b>Dysentery:</b>			North Dakota.....	22	
Florida.....	8		Vermont.....	82	
<b>German measles:</b>					
Arizona.....	2				
Connecticut.....	19				
New Mexico.....	3				

# **PATIENTS IN INSTITUTIONS FOR FEEBLE-MINDED, JULY-SEPTEMBER, 1930**

Reports for the third quarter of the year 1930 were received by the Public Health Service from 35 institutions for the care of the feeble-minded, located in 28 States and the Territory of Hawaii. The total number of persons in these institutions on September 30, 1930, including those on temporary leave or otherwise absent but still on the books, was 40,529.

The first admissions were as follows:

	Male	Female	Total
July.....	213	201	414
August.....	233	197	430
September.....	254	216	470
Total.....	700	614	1,314

Of the first admissions during the three months, 53.3 per cent were males and 46.7 per cent females, the ratio being 114 males per 100 females.

One hundred and twenty-four male patients and 97 female patients died during the three months. The annual death rates, based on the number of patients on the books September 30, 1930, were males, 23.7 per 1,000; females, 19.4 per 1,000; persons, 21.6 per 1,000. Three hundred and eighteen male patients and 198 female patients were discharged during the three months.

The following table shows the number of patients in the institutions and on temporary leave on July 1, 1930, and at the end of each month of the third quarter of 1930, and the percentages of the total number of patients who were on leave.

	July 1, 1930	July 31, 1930	Aug 31, 1930	Sept 30, 1930
<b>Patients in institutions.</b>				
Male.....	16,894	16,752	17,029	17,391
Female.....	16,962	16,919	17,128	17,415
Total.....	33,856	33,671	34,157	34,806
<b>Patients on temporary leave</b>				
Male.....	3,593	3,710	3,535	3,348
Female.....	2,488	2,628	2,511	2,375
Total.....	6,081	6,338	6,046	5,723
<b>Total patients on books.</b>				
Male.....	20,487	20,462	20,564	20,739
Female.....	19,450	19,547	19,639	19,790
Total.....	39,937	40,009	40,203	40,529
<b>Per cent of patients on temporary leave.</b>				
Male.....	17.5	18.1	17.2	16.1
Female.....	12.8	13.4	12.8	12.0
Total.....	15.2	15.8	15.0	14.1



## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 90 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,325,000. The estimated population of the 83 cities reporting deaths is more than 29,770,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended April 30, 1932, and May 2, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States .....	746	931	
90 cities .....	260	374	684
Measles:			
45 States .....	19,203	20,112	
90 cities .....	7,190	7,586	
Meningococcus meningitis:			
46 States .....	68	155	
90 cities .....	29	58	
Polomyelitis:			
46 States .....	24	22	
Scarlet fever:			
46 States .....	6,450	5,844	
90 cities .....	3,076	2,267	1,371
Smallpox:			
46 States .....	328	1,004	
90 cities .....	27	137	53
Typhoid fever:			
46 States .....	163	189	
90 cities .....	44	37	33
<i>Deaths reported</i>			
Influenza and pneumonia:			
83 cities .....	686	775	
Smallpox:			
83 cities .....	0	0	

*City reports for week ended April 30, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data have not been sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland .....	1	0	0	-----	1	6	8	2
New Hampshire:								
Concord .....	0	0	0	-----	0	3	0	1
Manchester .....	0	0	0	-----	0	0	0	0
Nashua .....	0	0	0	-----	0	0	0	0
Vermont:								
Barre .....	0	0	0	-----	0	0	2	0
Burlington .....	0	1	0	-----	0	0	1	0
Massachusetts:								
Boston .....	50	25	5	-----	0	139	79	29
Fall River .....	10	2	1	-----	1	66	2	2
Springfield .....	40	2	0	-----	0	147	25	4
Worcester .....	13	3	0	-----	0	4	20	2
Rhode Island:								
Pawtucket .....	0	1	0	-----	0	0	0	0
Providence .....	4	0	1	-----	1	57	1	10
Connecticut:								
Bridgeport .....	1	3	0	-----	1	0	15	3
Hartford .....	3	3	0	-----	1	0	10	8
New Haven .....	25	1	0	-----	0	0	17	1
MIDDLE ATLANTIC								
New York:								
Buffalo .....	18	9	3	-----	0	29	0	22
New York .....	305	227	103	-----	25	8	232	142
Rochester .....	2	3	0	-----	1	56	27	10
Syracuse .....	9	1	0	-----	0	427	13	6
New Jersey:								
Camden .....	5	9	0	-----	0	0	1	5
Newark .....		12		-----				
Tronton .....	1	3	0	-----	1	0	0	2
Pennsylvania:								
Philadelphia .....	81	58	7	-----	15	7	9	91
Pittsburgh .....	59	13	4	-----		1	268	26
Reading .....	13	1	1	-----		0	9	1
EAST NORTH CENTRAL								
Ohio:								
Cincinnati .....	9	6	8	-----	2	1	1	11
Cleveland .....	90	22	8	-----	50	2	1,074	77
Columbus .....	6	3	4	-----	8	1	31	1
Toledo .....	20	2	0	-----		0	31	0
Indiana:								
Fort Wayne .....	0	1	3	-----		1	1	0
Indianapolis .....	43	3	1	-----		1	10	199
South Bend .....	9	1	0	-----		0	8	0
Terre Haute .....	9	0	0	-----		0	12	0
Illinois:								
Chicago .....	75	80	19	-----	7	8	752	13
Springfield .....	8	0	1	-----		0	0	8
Michigan:								
Detroit .....	78	38	11	-----	4	4	506	56
Flint .....	18	2	0	-----	8	0	64	61
Grand Rapids .....	2	0	0	-----		1	157	31
Wisconsin:								
Kenosha .....	0	0	0	-----		0	49	2
Madison .....	1	0	0	-----			0	0
Milwaukee .....	74	9	1	-----	2	2	1,587	16
Racine .....	11	0	0	-----		0	305	36
Superior .....	0	0	0	-----		0	0	6

## City reports for week ended April 30, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	2	0	0	-----	0	0	0	3
Minneapolis.....	23	9	2	-----	1	11	25	6
St. Paul.....	7	5	2	-----	0	5	18	4
Iowa:								
Davenport.....	0	0	0	-----	-----	0	0	-----
Des Moines.....	0	0	1	-----	-----	0	0	-----
Sioux City.....	10	0	2	-----	-----	0	4	-----
Waterloo.....	1	0	0	-----	-----	0	0	-----
Missouri:								
Kansas City.....	-----	3	-----	-----	-----	-----	-----	-----
St. Joseph.....	0	0	1	-----	1	1	1	2
St. Louis.....	25	28	13	1	2	10	9	6
North Dakota:								
Fargo.....	-----	0	-----	-----	-----	-----	-----	-----
Grand Forks.....	0	0	0	-----	-----	0	0	-----
South Dakota:								
Aberdeen.....	1	0	0	-----	-----	1	0	-----
Nebraska:								
Omaha.....	6	2	3	-----	0	2	12	6
Kansas:								
Topeka.....	-----	0	-----	-----	-----	-----	-----	-----
Wichita.....	6	1	1	-----	0	152	8	5
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	2	0	-----	0	1	5	5
Maryland:								
Baltimore.....	108	19	9	3	6	14	126	18
Cumberland.....	0	0	0	0	0	7	0	1
Frederick.....	0	0	0	-----	0	0	0	0
District of Columbia:								
Washington.....	31	10	6	1	1	19	0	10
Virginia:								
Lynchburg.....	14	1	1	-----	0	0	0	0
Norfolk.....	9	1	0	3	0	23	0	6
Richmond.....	0	2	1	-----	1	0	0	5
Roanoke.....	8	0	0	-----	1	0	0	1
West Virginia:								
Charleston.....	0	0	0	2	0	50	0	2
Huntington.....	0	-----	0	-----	0	4	0	0
Wheeling.....	0	0	0	-----	0	12	0	2
North Carolina:								
Raleigh.....	2	0	0	-----	0	4	0	4
Wilmington.....	2	0	0	-----	0	1	0	2
Winston-Salem.....	3	1	0	6	0	6	6	5
South Carolina:								
Charleston.....	0	0	0	95	1	0	0	2
Columbia.....	2	1	1	-----	0	221	0	4
Greenville.....	0	0	0	-----	0	30	1	0
Georgia:								
Atlanta.....	7	2	1	10	2	0	0	9
Brunswick.....	2	0	0	-----	0	0	0	2
Savannah.....	6	0	0	21	2	1	0	0
Florida:								
Miami.....	6	1	2	1	1	1	0	0
Tampa.....	0	1	3	-----	0	2	4	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	-----	0	-----	-----	-----	-----	-----	-----
Lexington.....	1	-----	0	10	0	1	5	2
Tennessee:								
Memphis.....	5	2	2	-----	1	-----	0	2
Nashville.....	0	1	0	1	0	0	0	6
Alabama:								
Birmingham.....	2	2	0	3	1	1	2	13
Mobile.....	0	1	0	-----	0	0	0	1
Montgomery.....	2	0	1	2	-----	0	7	-----

## City reports for week ended April 30, 1933—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....		0	2			0	0	
Little Rock.....	1	0	0		2	0	1	7
Louisiana:								
New Orleans.....	3	10	17	2	3	1	0	6
Shreveport.....	2	0	1		0	6	7	0
Oklahoma:								
Muskogee.....	0		1	1		8	12	
Texas:								
Dallas.....	17	5	2	1	1		0	1
Fort Worth.....	10	0	1		2	0	0	0
Galveston.....	0	0	0		0	0	0	3
Houston.....	1	3	1		3	5	0	6
San Antonio.....	0	2	1		3	1	0	8
MOUNTAIN								
Montana:								
Billings.....		0						
Great Falls.....	1	0	0		0	1	0	1
Helena.....	0	0	0		0	4	0	0
Missoula.....	0	0	0	1	1	0	0	0
Idaho:								
Boise.....	1	0	0		0	0	1	1
Colorado:								
Denver.....		7						
Pueblo.....	15	0	0		1	0	2	0
New Mexico:								
Albuquerque.....	0	0	6		0	22	5	0
Arizona:								
Phoenix.....	1		0		0	0	0	1
Utah:								
Salt Lake City.....	40	3	2		1	1	2	1
Nevada:								
Reno.....	0	0	0		0	0	0	1
PACIFIC								
Washington:								
Seattle.....	14	2	0			116	7	
Spokane.....	10	1	0			6	0	
Tacoma.....	1	1	0		0	41	2	4
Oregon:								
Portland.....	6	5	0	3	0	214	8	5
Salem.....	1	1	0		0	2	4	0
California:								
Los Angeles.....		26						
Sacramento.....	43	2	2		0	35	2	2
San Francisco.....	69	10	2	5	1	249	18	8

## City reports for week ended April 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	4	2	0	0	0	1	0	0	0	3	30
New Hampshire:											
Concord .....	0	6	0	0	0	1	0	0	0	0	12
Manchester .....	1	10	0	0	0	1	0	0	0	0	15
Nashua .....	0	1	0	0	0	0	0	0	0	0	0
Vermont:											
Barre .....	0	0	0	0	0	1	0	0	0	0	5
Burlington .....	0	1	0	0	0	0	0	0	0	0	7
Massachusetts:											
Boston .....	81	165	0	0	0	16	1	1	0	22	247
Fall River .....	5	8	0	0	0	2	0	0	0	2	21
Springfield .....	11	10	0	0	0	2	0	0	0	3	34
Worcester .....	9	55	0	0	0	3	0	2	0	12	56
Rhode Island:											
Pawtucket .....	0	0	0	0	0	0	0	0	0	0	21
Providence .....	13	30	0	0	0	2	1	1	0	5	74
Connecticut:											
Bridgeport .....	9	21	0	0	0	0	0	0	0	0	30
Hartford .....	5	9	0	0	0	3	0	0	0	10	41
New Haven .....	5	16	0	0	0	3	1	0	0	8	44
MIDDLE ATLANTIC											
New York:											
Buffalo .....	25	100	0	0	0	8	0	0	0	24	114
New York .....	297	1,046	0	0	0	96	9	10	0	212	1,526
Rochester .....	10	98	0	0	0	2	0	0	0	9	80
Syracuse .....	13	36	0	0	0	3	1	0	0	62	46
New Jersey:											
Camden .....	5	55	0	0	0	0	1	0	0	4	37
Newark .....	31		0			0					
Trenton .....	6	6	0	0	0	4	0	0	0	2	30
Pennsylvania:											
Philadelphia .....	104	268	0	0	0	32	2	1	0	156	514
Pittsburgh .....	30	62	0	0	0	3	0	0	0	47	146
Reading .....	5	25	0	0	0	3	0	0	0	11	45
EAST NORTH CENTRAL											
Ohio:											
Cincinnati .....	25	55	2	0	0	4	1	0	0	5	131
Cleveland .....	46	114	0	0	0	17	0	0	0	161	201
Columbus .....	9	6	0	4	0	1	0	2	0	13	72
Toledo .....	13	8	1	0	0	0	0	0	0	81	53
Indiana:											
Fort Wayne .....	4	1	1	0	0	1	0	0	0	0	20
Indianapolis .....	14	17	6	0	0	10	0	1	1	32	38
South Bend .....	5	3	1	0	0	2	0	0	0	0	18
Terre Haute .....	2	7	0	0	0	0	0	0	0	1	15
Illinois:											
Chicago .....	130	222	2	0	0	42	2	0	0	117	670
Springfield .....	5	2	0	0	0	0	0	0	0	7	16
Michigan:											
Detroit .....	120	265	1	0	0	21	2	2	0	181	251
Flint .....	13	2	2	0	0	1	1	0	0	24	21
Grand Rapids .....	13	7	1	0	0	2	0	0	0	12	34
Wisconsin:											
Kenosha .....	3	1	0	0	0	0	0	0	0	5	9
Madison .....	3	1	0	0			0	0		22	
Milwaukee .....	29	29	1	1	0	7	0	0	0	115	124
Racine .....	6	0	0	0	0	1	0	0	0	0	15
Superior .....	2	1	0	0	0	0	0	0	0	0	0

## City reports for week ended April 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	2	0	0	0	1	0	0	0	1	28
Minneapolis.....	30	56	0	0	0	3	0	0	0	22	100
St. Paul.....	25	16	0	0	0	4	1	0	0	15	50
Iowa:											
Davenport.....	1	3	4	0			0	0		0	
Des Moines.....	8	22	3	1			0	0		0	34
Sioux City.....	1	4	0	1			0	0		3	
Waterloo.....	1	0	1	0			0	1		5	
Missouri:											
Kansas City.....	20		0				1				
St. Joseph.....	4	2	0	0	0	2	0	0	0	0	22
St. Louis.....	65	14	3	0	0	21	1	1	0	53	245
North Dakota:											
Fargo.....	4		0				0				
Grand Forks.....	0	0	0	0			0	0		0	
South Dakota:											
Aberdeen.....	0	0	0	0			0	0		1	
Nebraska:											
Omaha.....	4	2	4	3	0	1	0	0	0	1	54
Kansas:											
Topeka.....	4		1				0				
Wichita.....	3	1	1	0	0	0	0	0	0	1	32
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	5	14	0	0	0	1	0	0	0	18	29
Maryland:											
Baltimore.....	41	74	0	0	0	5	2	4	0	151	212
Cumberland.....	1	1	0	0	0	1	0	1	0	0	16
Frederick.....	0	2	0	0	0	0	0	0	0	3	
District of Colum- bia:											
Washington.....	25	35	1	0	0	10	0	0	0	28	171
Virginia:											
Lynchburg.....	0	3	0	0	0	1	0	0	0	48	18
Norfolk.....	1	3	0	0	0	0	0	1	0	17	29
Richmond.....	4	16	0	0	0	3	0	0	0	0	43
Roanoke.....	1	12	0	0	0	0	0	0	0	3	16
West Virginia:											
Charleston.....	1	1	0	0	0	1	0	1	1	4	18
Huntington.....	0	0	0	0	0	0	0	0	0	0	
Wheeling.....	1	0	0	0	0	2	0	0	1	7	17
North Carolina:											
Raleigh.....	0	0	1	0	0	0	0	0	0	3	10
Wilmington.....	0	0	0	0	0	0	0	0	0	12	21
Winston-Salem.....	0	18	0	0	0	1	0	0	0	31	13
South Carolina:											
Charleston.....	0	0	0	0	0	2	0	0	0	1	28
Columbia.....	0	1	0	0	0	7	0	0	0	3	60
Greenville.....	0	1	0	0	0	0	0	0	0	0	
Georgia:											
Atlanta.....	6	5	2	0	0	1	1	2	0	9	80
Brunswick.....	0	0	0	0	0	0	0	1	0	0	5
Savannah.....	1	0	0	0	0	3	0	0	0	5	28
Florida:											
Miami.....	0	0	0	0	0	8	0	1	1	0	20
Tampa.....	0	1	0	0	0	0	1	0	0	0	23
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2		0				0				
Lexington.....		0		0	0	3		0	0	3	17
Tennessee:											
Memphis.....	10	5	2	2	0	5	0	0	0	29	63
Nashville.....	2	1	1	0	0	1	0	1	0	5	47
Alabama:											
Birmingham.....	3	0	1	0	0	4	1	0	0	16	68
Mobile.....	0	2	0	8	0	2	0	0	0	2	21
Montgomery.....	1	0	0	0			0	1		0	

## City reports for week ended April 30, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0			0	0		7	
Little Rock.....	1	1	0	0	0	3	0	0	0	4	12
Louisiana:											
New Orleans...	13	6	0	0	0	12	2	3	1	1	137
Shreveport.....	0	1	0	0	0	0	1	0	0	3	13
Oklahoma:											
Muskogee.....		4		0				0		0	
Texas:											
Dallas.....	5	4	1	0	0	4	0	2	1	24	47
Fort Worth.....	1	14	5	1	0	2	0	0	0	0	33
Galveston.....	0	0	0	0	0	1	0	3	0	0	14
Houston.....	2	1	3	0	0	3	0	0	0	0	72
San Antonio....	2	0	0	0	0	8	0	0	0	0	59
MOUNTAIN											
Montana:											
Billings.....	0		1				0				
Great Falls....	0	0	1	0	0	2	0	0	0	0	11
Helena.....	1	0	0	0	0	0	0	0	0	0	5
Missoula.....	1	1	0	0	0	0	0	0	0	0	7
Idaho:											
Boise.....	1	0	0	0	0	1	0	0	0	0	4
Colorado:											
Denver.....	13		0				0				
Pueblo.....	0	1	0	0	0	0	0	0	0	4	14
New Mexico:											
Albuquerque....	0	0	0	0	0	4	0	1	0	1	7
Arizona:											
Phoenix.....	0	1	0	0	0	2	0	0	0	0	
Utah:											
Salt Lake City..	2	3	0	0	0	2	0	0	0	6	31
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	8	7	3	3			0	2		5	
Spokane.....	5	1	8	0			0	0		6	
Tacoma.....	1	5	3	5	0	0	0	0	0	0	22
Oregon:											
Portland.....	5	0	8	10	0	1	0	0	1	14	79
Salem.....	0	0	1	1			0	0	0	2	
California:											
Los Angeles.....	32		7				2				
Sacramento.....	2	0	1	0	0	4	1	0	0	7	88
San Francisco....	22	7	1	0	0	13	0	1	1	18	126

## City reports for week ended April 30, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Maine:									
Portland.....	0	1	0	0	0	0	0	0	0
Massachusetts:									
Boston.....	0	0	0	1	0	0	0	0	0
Worcester.....	0	0	0	0	0	0	0	1	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York.....	3	1	2	4	0	0	0	0	0
Pennsylvania:									
Philadelphia.....	0	3	0	0	0	0	0	1	0
Pittsburgh.....	1	1	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	2	2	0	0	0	0	0	0	0
Cleveland.....	0	1	0	0	0	1	0	0	0
Columbus.....	0	0	0	0	0	0	0	1	1
Indiana:									
Indianapolis.....	4	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	3	3	0	0	0	0	1	0	0
Michigan:									
Detroit.....	2	2	0	0	0	0	0	0	0
Wisconsin:									
Madison.....	0	0	0	0	0	0	0	1	0
<b>WEST NORTH CENTRAL</b>									
Missouri:									
St. Louis.....	1	0	0	0	0	0	0	0	0
Nebraska:									
Omaha.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Virginia:									
Lynchburg.....	0	0	0	0	0	1	0	0	0
North Carolina:									
Raleigh.....	2	1	0	0	0	0	0	0	0
Wilmington.....	0	0	0	0	0	1	0	0	0
Winston-Salem.....	0	0	0	0	2	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	0	0	0	0
Columbia.....	1	0	0	0	0	0	0	0	0
Georgia:									
Atlanta.....	1	0	0	0	0	0	0	0	0
Savannah <sup>1</sup> .....	0	0	0	0	5	0	0	0	0
Florida: <sup>1</sup>									
Miami.....	0	0	0	0	1	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	1	0	0	0	0	0	1	0
Alabama:									
Mobile.....	0	0	0	0	0	2	0	0	0
Montgomery.....	0	0	0	0	1	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	1	1	1	1	0
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
Fort Worth.....	1	0	0	0	0	1	0	1	0
<b>PACIFIC</b>									
California:									
San Francisco.....	1	2	1	0	0	0	0	0	0

<sup>1</sup> Typhus fever, 2 cases: 1 case at Savannah, Ga., and 1 case at Tampa, Fla.



The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended April 30, 1932, compared with those for a like period ended May 2, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, March 27 to April 30, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931
98 cities.....	47	53	51	65	54	66	51	53	143	63
New England.....	38	46	62	84	29	79	36	58	121	86
Middle Atlantic.....	44	48	53	59	49	62	55	46	52	61
East North Central.....	20	64	46	86	44	83	41	58	33	94
West North Central.....	78	42	27	63	49	63	57	67	156	57
South Atlantic.....	37	47	37	49	49	65	39	51	43	69
East South Central.....	6	29	40	18	17	23	17	23	19	6
West South Central.....	158	85	92	54	119	74	102	71	79	68
Mountain.....	17	44	52	35	60	17	86	26	135	26
Pacific.....	57	53	70	57	110	43	59	63	115	53

## MEASLES CASE RATES

98 cities.....	846	1,122	800	1,327	982	1,316	1,107	1,342	1,200	1,250
New England.....	777	1,108	697	1,503	765	1,340	851	1,286	1,318	964
Middle Atlantic.....	621	1,250	560	1,422	554	1,544	579	1,419	456	1,411
East North Central.....	1,573	726	1,688	830	2,160	789	2,080	1,073	2,821	896
West North Central.....	398	532	388	704	724	589	491	830	421	777
South Atlantic.....	245	3,814	343	4,554	298	4,350	339	4,065	663	3,577
East South Central.....	6	1,515	23	1,768	0	1,627	12	1,615	16	1,439
West South Central.....	208	88	49	68	30	102	26	139	43	156
Mountain.....	664	661	1,008	644	1,336	922	1,043	661	1,068	661
Pacific.....	1,262	359	1,312	500	952	417	916	517	1,713	506

## SCARLET FEVER CASE RATES

98 cities.....	413	371	423	362	477	382	455	406	1513	372
New England.....	683	577	774	474	796	584	678	576	1971	582
Middle Atlantic.....	632	404	625	413	744	415	721	498	750	409
East North Central.....	345	377	360	337	399	382	369	431	436	402
West North Central.....	206	585	226	538	267	518	262	469	1,226	480
South Atlantic.....	345	291	318	356	310	307	314	305	359	273
East South Central.....	92	399	87	470	40	587	87	399	150	411
West South Central.....	46	95	53	105	56	112	46	98	43	182
Mountain.....	129	157	250	174	207	278	190	191	189	191
Pacific.....	122	92	145	104	148	116	171	86	177	94

See footnotes at end of table.

Summary of weekly reports from cities, March 27 to April 30, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## SMALLPOX CASE RATES

	Week ended—									
	Apr. 2, 1932	Apr. 4, 1931	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931
98 cities.....	4	14	6	19	7	22	8	21	15	23
New England.....	2	0	0	0	0	0	0	0	10	0
Middle Atlantic.....	0	0	0	1	0	2	0	1	0	1
East North Central.....	4	9	4	6	6	19	2	20	3	10
West North Central.....	2	78	9	96	13	92	15	71	19	115
South Atlantic.....	0	2	8	18	0	10	0	6	0	6
East South Central.....	35	12	52	0	46	53	110	35	162	59
West South Central.....	3	71	10	81	7	95	3	98	0	102
Mountain.....	26	0	9	17	17	9	86	17	10	0
Pacific.....	13	16	23	53	27	27	23	41	131	51

## TYPHOID FEVER CASE RATES

98 cities.....	5	4	3	5	5	5	5	3	17	6
New England.....	0	2	2	2	0	2	0	2	12	7
Middle Atlantic.....	3	3	1	5	2	4	5	4	5	7
East North Central.....	4	2	2	3	4	2	1	2	3	4
West North Central.....	2	4	0	0	2	4	2	4	15	4
South Atlantic.....	8	14	16	16	12	8	12	2	18	14
East South Central.....	6	0	23	6	35	12	6	6	12	12
West South Central.....	13	10	0	3	10	7	23	0	26	0
Mountain.....	0	9	0	0	9	9	9	9	10	0
Pacific.....	17	2	6	8	6	10	6	4	11	6

## INFLUENZA DEATH RATES

91 cities.....	29	23	25	18	20	17	18	13	14	11
New England.....	17	2	5	19	7	7	12	7	19	7
Middle Atlantic.....	34	17	23	12	23	12	18	12	8	12
East North Central.....	24	18	22	14	20	10	13	6	13	5
West North Central.....	17	12	23	15	20	29	20	18	16	12
South Atlantic.....	39	40	61	30	29	32	29	10	27	29
East South Central.....	56	127	75	70	38	76	38	45	14	19
West South Central.....	40	69	40	45	10	45	30	55	40	38
Mountain.....	69	26	34	17	9	17	9	17	53	28
Pacific.....	2	14	0	19	5	10	9	5	6	2

## PNEUMONIA DEATH RATES

91 cities.....	167	171	151	155	124	161	107	138	107	122
New England.....	165	127	192	173	129	144	146	132	187	154
Middle Atlantic.....	203	223	186	168	162	180	128	165	110	141
East North Central.....	113	120	79	118	74	127	72	98	78	76
West North Central.....	204	150	180	253	143	245	143	230	130	180
South Atlantic.....	235	226	204	200	167	188	118	168	141	180
East South Central.....	194	172	201	178	184	293	113	127	180	121
West South Central.....	172	238	205	169	91	173	101	145	87	132
Mountain.....	121	157	129	191	86	113	112	104	71	61
Pacific.....	88	53	72	60	56	67	51	46	54	46

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Newark, N. J., Kansas City, Mo., Fargo, N. Dak., Topeka, Kans., Covington, Ky., Billings, Mont., Denver, Colo., and Los Angeles, Calif., not included.

<sup>3</sup> Newark, N. J., not included.

<sup>4</sup> Kansas City, Mo., Fargo, N. Dak., and Topeka, Kans., not included.

<sup>5</sup> Covington, Ky., not included.

<sup>6</sup> Billings, Mont., and Denver, Colo., not included.

<sup>7</sup> Los Angeles, Calif., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended April 23, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended April 23, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Polio-myelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....						
Nova Scotia.....	1	42				
New Brunswick.....						1
Quebec.....	1	5		1		22
Ontario.....	1	57	1		4	7
Manitoba.....	3					2
Saskatchewan.....					5	
Alberta <sup>1</sup> .....						
British Columbia.....	1					
Total .....	7	104	1	1	9	32

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended April 23, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended April 23, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Polio-myelitis.....	1
Chicken pox.....	48	Puerperal sepsis.....	1
Diphtheria.....	29	Scarlet fever.....	70
Erysipelas.....	11	Tuberculosis.....	82
German measles.....	6	Typhoid fever.....	22
Influenza.....	5	Whooping cough.....	46
Measles.....	383		

### LATVIA

*Communicable diseases—February, 1932.*—During the month of February, 1932, cases of certain communicable diseases were reported in Latvia as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Puerperal fever.....	15
Diphtheria.....	62	Scarlet fever.....	43
Erysipelas.....	22	Tetanus.....	2
Influenza.....	186	Trachoma.....	84
Measles.....	36	Typhoid fever.....	41
Mumps.....	159	Whooping cough.....	216
Polio-myelitis.....	3		

## PANAMA CANAL ZONE

*Communicable diseases—February and March, 1932.*—During the months of February and March, 1932, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	February		March	
	Cases	Deaths	Cases	Deaths
Chicken pox.....	36	—	34	—
Diphtheria.....	9	3	4	—
Dysentery (amebic).....	—	—	3	2
Leprosy.....	2	—	2	—
Malaria.....	71	2	32	1
Measles.....	35	1	78	2
Mumps.....	—	—	1	—
Pneumonia.....	—	36	—	29
Polioomyelitis.....	3	1	1	—
Scarlet fever.....	3	—	1	—
Tuberculosis.....	—	30	—	31
Typhoid fever.....	2	—	3	1
Whooping cough.....	15	—	8	—

## YUGOSLAVIA

*Communicable diseases—March, 1932.*—During the month of March, 1932, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	22	1	Polioomyelitis.....	2	2
Cerebrospinal meningitis.....	20	8	Scarlet fever.....	336	31
Diphtheria and croup.....	556	75	Sepsis.....	10	4
Dysentery.....	21	1	Tetanus.....	13	7
Erysipelas.....	156	10	Typhoid fever.....	110	16
Measles.....	1,316	15	Typhus fever.....	16	1
Paratyphoid fever.....	4	1			

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

## CHOLERA

[C indicates cases; D, deaths; P, present]

Place	Oct. 18- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Week ended—															
				January, 1932				February, 1932				March, 1932				April, 1932			
				16	23	30	6	13	20	27	5	12	19	26	2	9	16	23	
Ceylon: Colombo.....		3																	
China:		3																	
Canton.....		3																	
Hankow.....	23	14	2	1													1	1	
Shanghai.....	8	6	1																
Swatow.....	4																		
India:																			
Bombay.....	15,722	14,314	14,899	2,953	2,958	2,078	2,012	1,627	1,565	1,289	1,345								
Calcutta.....	8,801	7,467	7,684	1,590	1,508	1,137	1,032	586	823	685	694								
Chittagong.....																			
Madras.....																			
Rangoon.....																			
India (French):																			
Chander Nagar.....																			
Karikal.....																			
Pondicherry Territory.....																			
Pondicherry.....																			
India (Portuguese).....																			
Indo-China (see also table below):																			
French Indo-China.....	48	3	1																
Saloon and Cholera.....	11	3	1																
	4																		
		P	2																





Zanzibar (see table below).

Egypt:  
Alexandria.....

Asiout.....

Beheira.....

Girga.....

Kena.....

Minieh.....

Port Said.....

Tanta.....

France: Rouen—Devililles.....

Hawaii Territory:  
Hawaii Island.....

Hawaii: Honolulu.....

Hawaii: Honolulu.....

Hawaii: Honolulu.....

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Hawaii: Honolulu.....

1 Including plague in the United States and its possessions.  
 2 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.

























## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place	Oct. 18- Nov. 1931	Nov. 16- Dec. 12, 1931	Dec. 13- Jan. 9, 1932	Week ended—													
				January, 1932			February, 1932			March, 1932			April, 1932				
				16	23	30	6	13	20	27	5	12	19	26	2	9	16
Brazil:																	
Alagoas State—																	
Maceio.....	1																
Utinga.....	3																
Bahia State.....	2																
Bahia State.....			2														
Sobral.....	1																
Ocara State.....	1																
Espirito Santo State <sup>1</sup> .....																	
Santa Teresa (about 56 miles from Vic-																	
toria).....																	
Fernambuco State—Pau d'Alho.....	1										1						
Dahomey: Porto Novo.....	1																
Gold Coast:																	
Avinidu.....																	
Cape Coast.....																	
Dagomba District.....												P			1	1	
Salaga.....		1															
Tsunale.....		1															
Yendi.....		3															
Ivory Coast: Téhini.....	1																
Nigeria.....	2	2							1								
Sudan (French): Macina—Kayo Circle.....	1	2															
Togo (French): Atakpame—Anie Circle.....	2	2															
Upper Volta: Dedougou.....	1	1															
.....	2																

<sup>1</sup> During the 2 weeks ended Apr. 23, 1932, a number of cases of suspected yellow fever were reported in the interior of the State.

X

UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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## SPECIAL ARTICLES

Prevalence of Venereal Disease in New Orleans, La.  
Complete Routine Physical Examination of Prisoners



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

MAY 27, 1932

NO. 22

## PREVALENCE OF VENEREAL DISEASE IN NEW ORLEANS, LA.

Report Based on a One-Day Census Taken on February 2, 1931

By TALIAFERRO CLARK, *Assistant Surgeon General*, and LIDA J. USILTON, *Associate Statistician, United States Public Health Service*

### PURPOSE AND METHOD

During the month of February, 1931, the United States Public Health Service was invited to cooperate in a social hygiene survey in the city of New Orleans. The local social hygiene committee of New Orleans had worked out a plan of cooperation with the American Social Hygiene Association and the State and county health authorities of New Orleans for conducting a survey of the medical and educational phases of social hygiene. The United States Public Health Service was requested to take charge of the 1-day census of cases of venereal diseases under treatment or observation to determine the prevalence of the disease.

The prevalence survey of this city is the twenty-eighth one made in communities throughout the United States including physicians and institutions charged with the medical care of a population of approximately 25,800,000 persons, or 21 per cent of the total population of continental United States. It has been found most helpful in undertaking to control various communicable and infectious diseases to learn the present number of individuals infected, the mode of the infection, the effectiveness of control methods set up to prevent the spread of the disease, and also the availability of adequate facilities for free treatment for those unable to secure treatment from a pay source. The availability of free treatment is especially essential in metropolitan areas where there are many indigent persons.

New Orleans is the largest city of the South in which a venereal disease prevalence survey has been made, although similar studies have been conducted in a number of large cities of the North, East, and West; namely, Portland (Oreg.), Detroit, Cleveland, St. Louis, New York, and Philadelphia.

The surveys are made by means of a 1-day census in which each physician, hospital, clinic, or other institution authorized to treat the sick, is requested to report the number of persons actively on their records as of a given day who have gonorrhea or syphilis and the number who reported during the preceding month with a fresh infection. In a disease in which there are a number of residuals and complications of



the original disease it is important to know the constant patient load as well as the number of fresh infections occurring each year. Possibly no disease stands out so prominently in this field as does syphilis. Here is a disease which has the best of diagnostic possibilities, a specific for its early treatment and cure, and organized medical sources for free treatment, and yet stands as one of the truly menacing diseases not only in this country but throughout the world, both to the present generation and to posterity.

Any figures given in this report represent necessarily only the minimum number of cases infected in the city's population. Undoubtedly there are many persons who do not report for treatment who are able to set up some immunity of their own, are self-treated, or else are treated over the drug store counter.

In New Orleans 218 male and female patients were interviewed in three clinics. They were asked what treatment for syphilis or gonorrhea they had received previous to seeking treatment in this clinic. Of this group, 20 per cent of the white and 7 per cent of the colored were receiving their first treatment; of the others, 19 per cent of the whites and 37 per cent of the negroes had received treatment over the drug store counter, while 34 per cent of the whites and 46 per cent of the negroes were self-treated before admission to the clinic. If public clinic patients are an example of what one may expect of private practice cases, these figures would indicate that only 50 per cent of the whites and less than 20 per cent of the negroes come immediately to an authorized medical source for treatment of their infection.

There are several ways in which a survey of this kind might be conducted, but it is believed that the most reliable data that can be secured are to be found in the method followed.

In the first place the data are from reliable and cooperative sources, that is, the physicians of the community and the institutions. Practically 100 per cent returns have been received. In instances where the execution of the report was an onerous task by reason of the many cases under treatment or the lack of an adequate cross-index filing system, a personal representative of the United States Public Health Service assisted in making out the report. In one hospital as many as 56,000 records were reviewed. Every effort has been made to make the report as complete and accurate as possible. Ninety-nine per cent of the physicians in New Orleans cooperated in this study, and every hospital and institution made a return.

#### CONTENT

The data are presented in three parts. One is that in which the prevalence of the disease is shown. By prevalence is meant the number of persons who are constantly under treatment each day in the year for either syphilis or gonorrhea and its residuals. The

second part shows the incidence, or fresh infections, occurring annually as based on the number reporting for the first time to any medical source in a selected month. There has been found to be approximately no seasonal variation in the venereal diseases. The third part is the comparison of the venereal disease problem in New Orleans with that of other cities of comparable size throughout the United States.

#### SOURCE OF REPORTS

February 2, 1931, was selected as the date for the survey. In Table 1 the source from which the reports were received is shown with the percentage of cases reported by each. Thirty-two per cent of the physicians had one or more cases under treatment, with practically an even distribution of cases reported under private care and reported in institutions.

TABLE 1.—Source of reports and the number of cases of venereal disease under treatment or observation in New Orleans, La., on February 2, 1931

Source	Total number of reports	Number reporting no cases	Number reporting 1 or more cases	Per cent reporting 1 or more cases	Total number of cases reported	Percentage of cases reported by each source
Total.....	697	485	212	30.4	4,820	100.0
Physicians.....	620	425	195	31.5	2,386	49.5
Orthopaths and chiropractors.....	6	6				
Clinics.....	12	6	6	50.0	1,949	40.4
Hospitals.....	13	9	4	30.8	884	8.0
Institutions.....	46	39	7	15.2	101	2.1

#### PREVALENCE

##### CASE RATES PER 1,000 POPULATION

In the city of New Orleans there were 4,820 cases of syphilis and gonorrhea reported under treatment as of February 2, 1931. There were 2,676 cases of syphilis and 2,144 cases of gonorrhea, or 10.5 cases of syphilis and gonorrhea for every 1,000 of the population. The rate was nearly twice as high among the colored population as among the white, being 15.3 and 8.6, respectively, per 1,000 population. This condition is particularly true of syphilis, in which the rate for males is more than twice as high for the colored as for the white, and for females five times as high for the colored as for the white. In the case of gonorrhea this relation does not hold, the male rate being nearly the same for the two races and the white female rate being higher than the colored female rate. We have no explanation for the low gonorrhea rate; undoubtedly there are actually as many colored females with gonorrhea as white females. This statement is premised on the fact that the syphilis rate for the colored female is so much higher than that for the white female. It is quite possible that many of the colored females have not had their

condition diagnosed or have failed to report to authorized medical sources. These facts are further illustrated in Figure 1.

TABLE 2.—Number of cases of syphilis and gonorrhea in New Orleans, La., on February 2, 1931, and the case rates per 1,000 population for the white and colored of both sexes

	Total			White			Colored		
	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females
Total cases under treatment:									
Syphilis and gonorrhea.....	4,820	3,362	1,458	2,835	2,121	714	1,985	1,241	744
Syphilis.....	2,676	1,736	940	1,259	946	313	1,417	790	627
Gonorrhea.....	2,144	1,626	518	1,576	1,175	401	568	451	117
Case rate per 1,000 population:									
Syphilis and gonorrhea.....	10.5	15.3	6.1	8.6	13.3	4.2	15.3	20.8	10.6
Syphilis.....	5.8	7.9	3.9	3.8	5.9	1.8	10.9	13.2	8.9
Gonorrhea.....	4.7	7.4	2.2	4.8	7.4	2.4	4.4	7.6	1.7

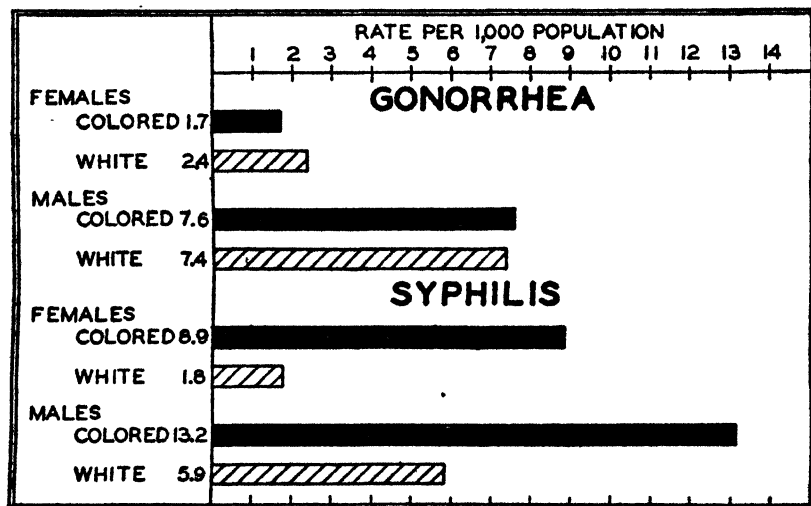


FIGURE 1.—Case rates for gonorrhea and syphilis, by sex and color, in New Orleans, La.

TABLE 3.—Case rates per 1,000 population for early and late syphilis and for acute and chronic gonorrhea in New Orleans, La., on February 2, 1931

Diagnosis	White				Colored				Total			
	Males		Females		Males		Females		Males		Females	
	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic
	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic	Total	Early or acute	Late or chronic
Syphilis.....	5.9	2.4	3.5	1.8	0.6	1.2	13.2	6.8	6.9	9.6	2.8	6.8
Gonorrhea.....	7.4	5.0	2.4	2.4	.9	1.5	7.6	4.1	3.5	1.7	.7	1.0
CASE RATES PER 1,000 POPULATION												
Syphilis.....	5.9	2.4	3.5	1.8	0.6	1.2	13.2	6.8	6.9	9.6	2.8	6.8
Gonorrhea.....	7.4	5.0	2.4	2.4	.9	1.5	7.6	4.1	3.5	1.7	.7	1.0
NUMBER OF CASES												
Syphilis.....	946	383	563	313	101	212	790	377	413	627	178	449
Gonorrhea.....	1,175	799	376	401	143	258	451	242	209	117	59	58

In Table 3 an effort was made to determine the stage of the infection of the patient on admission for treatment. Among the males of both races with syphilis there were more under treatment with late or chronic infections than there were with early infections. The same thing is true of the females. However, more of the males with gonorrhea are under treatment with an acute infection than with a chronic one, whereas among the females more are under treatment for chronic gonorrhea than for acute.

#### DISTRIBUTION OF CASES BY PHYSICIANS

Table 4 shows that there is considerable specialization in the treatment of syphilis and gonorrhea among physicians. Approximately 90 per cent of the cases of private physicians are in the hands of 15 per cent of the physicians. In fact, 1.6 per cent of the physicians have more than one-third of the total private practice cases. This condition is one which is usually found in the large cities where there are adequate public clinic facilities for the treatment of the disease.

TABLE 4.—*Distribution of physicians by number of cases of venereal disease under treatment or observation, showing physicians treating only syphilis or gonorrhea and those treating both infections, in New Orleans, La., on February 2, 1931*

Number of cases under treatment	Distribution of physicians by cases reported		Physicians having under treatment—							
			Syphilis only		Gonorrhea only		Syphilis and gonorrhea		Total cases of venereal disease	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Total.....	620	100.0	69	100.0	27	100.0	99	100.0	2,386	100.0
None.....	425	68.5								
1 to 4.....	100	16.1	53	76.8	21	77.8	26	26.3	229	9.6
5 to 9.....	40	6.5	10	14.5	5	18.5	25	25.2	270	11.3
10 to 14.....	14	2.3	4	5.8			10	10.1	158	6.6
15 to 19.....	7	1.1					7	7.1	119	5.0
20 to 49.....	24	3.9	2	2.9	1	3.7	21	21.2	711	29.8
50 or more.....	10	1.6					10	10.1	899	37.7

#### DISTRIBUTION OF CASES IN PUBLIC CLINICS AND PRIVATE PRACTICE

Table 5 shows the distribution of the cases in private practice and in public clinics. Among the males treated for syphilis, approximately one-third of the private practice cases are early syphilis; the remaining two-thirds are under public clinic care. This distribution is largely the result of the high percentage of colored patients with early syphilis under public clinic care; in fact 90 per cent are in the hands of public clinics, whereas only 10 per cent are under the care of private physicians. Among the white cases with early syphilis, one-third are in public clinics and two-thirds under the care of private physicians. Little more than one-half of the white females with either early or late syphilis are in the hands of private physicians, whereas, only one-tenth of the colored females with either early or late syphilis are in the hands

of private practitioners, the remaining 90 per cent being under public clinic care.

The distribution of gonorrhea cases in private practice and public clinics is similar to that of syphilis for the white males; but for the colored males, 32 per cent of the gonorrhea cases are in private practice as compared with only 17 per cent of the colored males with syphilis. Among the white females approximately 80 per cent of both acute and chronic gonorrhea are under treatment in private practice, whereas among the colored 44 per cent of the acute and 64 per cent of the chronic cases are under treatment in private practice. These facts are presented in Figure 2.

TABLE 5.—Percentage of early and late cases of syphilis and of acute and chronic gonorrhea under treatment in private practice and in public clinics by sex and color, in New Orleans, La., on February 2, 1931

Diagnosis	Treated in private practice						Treated in public clinics, etc.					
	Males			Females			Males			Females		
	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored
PER CENT OF CASES												
Total syphilis.....	44.0	66.3	17.3	25.9	58.1	9.7	56.0	33.7	82.7	74.1	41.9	90.2
Early syphilis.....	38.2	65.5	10.3	27.9	58.4	10.3	61.8	34.5	89.7	72.1	41.6	89.7
Late syphilis.....	48.6	66.8	23.7	25.0	58.0	9.5	51.4	33.2	76.3	75.0	42.0	90.5
Total gonorrhea.....	60.6	71.5	32.4	75.9	81.8	55.6	39.4	28.5	67.6	24.1	18.2	44.4
Acute gonorrhea.....	63.7	72.2	35.5	75.6	86.7	44.0	36.3	27.8	64.5	24.4	13.3	56.0
Chronic gonorrhea.....	55.2	69.9	28.7	76.0	79.1	64.2	44.8	30.1	71.3	24.0	20.9	35.8
NUMBER OF CASES												
Total syphilis.....	764	627	137	243	182	61	972	319	653	697	131	566
Early syphilis.....	290	251	39	77	59	18	470	132	338	199	42	157
Late syphilis.....	474	376	98	166	123	43	502	187	315	498	89	409
Total gonorrhea.....	986	840	146	393	328	65	640	335	306	125	73	52
Acute gonorrhea.....	663	577	86	146	124	22	378	222	156	47	19	28
Chronic gonorrhea.....	323	263	60	247	204	43	262	113	149	78	54	24
TOTAL NUMBER OF CASES UNDER TREATMENT												
Total syphilis.....	1,786	946	790	640	518	117	1,786	946	790	640	518	117
Early syphilis.....	760	383	377	276	101	175	760	383	377	276	101	175
Late syphilis.....	976	563	413	664	212	469	976	563	413	664	212	469
Total gonorrhea.....	1,626	1,175	451	518	401	117	1,626	1,175	451	518	401	117
Acute gonorrhea.....	1,041	799	242	193	143	50	1,041	799	242	193	143	50
Chronic.....	585	376	209	325	258	67	585	376	209	325	258	67

#### ANNUAL INCIDENCE

By annual incidence is meant the number of persons who seek treatment for the first time from an authorized source during a year. This annual incidence rate is based on the first-time admissions reported during the month of January, 1931, to the physicians and institutions in New Orleans.

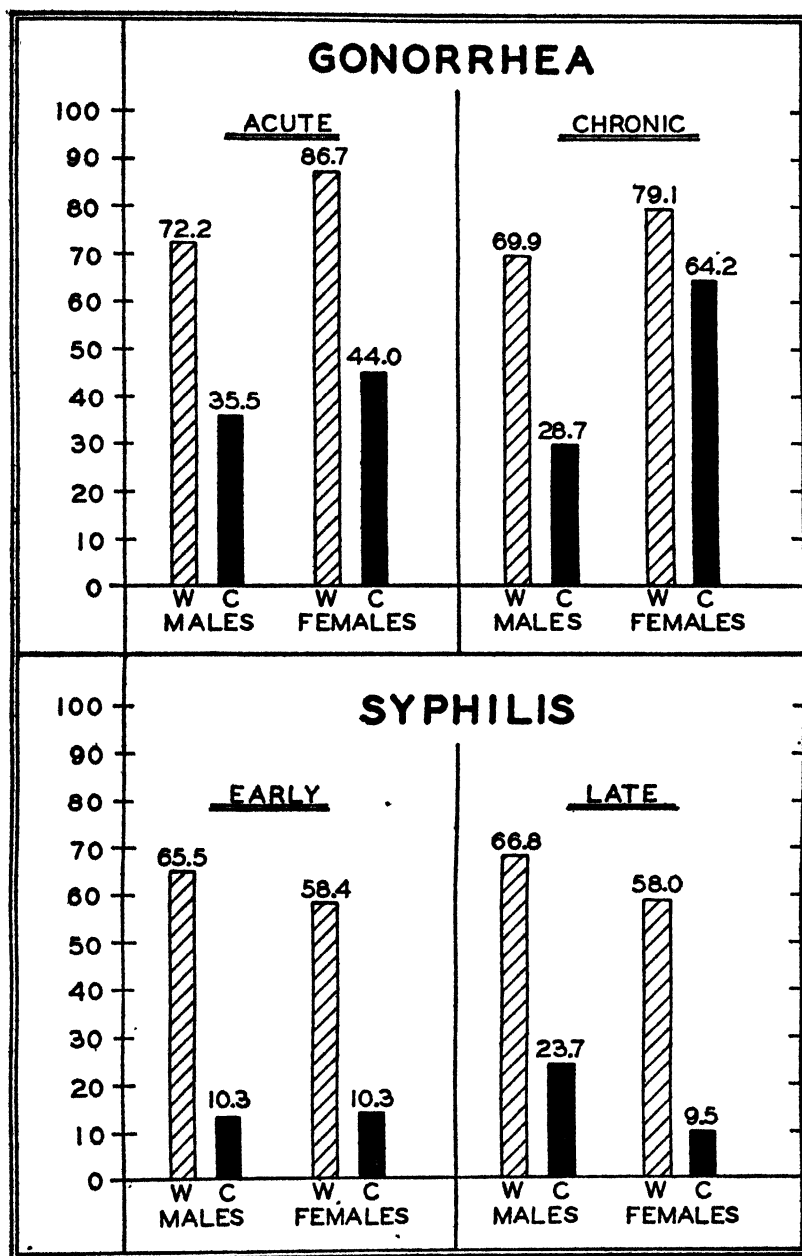


FIGURE 2.—Per cent of cases of gonorrhea and syphilis under treatment in private practice in New Orleans, La.

The annual incidence of venereal disease for New Orleans is 35.3 per 1,000 population as shown in Table 6. The total number of first-time admissions to any authorized medical source in New Orleans for cases of either gonorrhea or syphilis is approximately 16,000 persons per annum. It is encouraging to find that in New Orleans most of the first-time admissions for treatment are while the patient is in the early stages of syphilis or in the acute stages of gonorrhea. However, it should be possible still further to encourage the seeking of treatment while the infection is in the early stages.

In New Orleans it was found that there were 5,052 first-time admissions for syphilis among the males and 1,476 among the females during the year, based on the data collected during the month of January, 1931. Of this number, 3,000 of the males had early syphilis and 744 of the females, making the rate per 1,000 population 13.7 for the males and 3.1 for the females. In the case of gonorrhea a total of 7,188 males reporting for treatment showed 5,856 reporting while their gonorrhea was in the acute stage. Among the females there were 2,508 cases of gonorrhea, and 1,404 of them reported while the disease was in the acute stage. The rate per 1,000 population among the males reporting while their gonorrhea was in the acute stage was 26.7, and for the females 5.9.

The ratio of incidence to prevalence for syphilis is 2.9 for the males and 1.6 for the females, indicating that the male patient stays under treatment for approximately 4 months and the female patient 7.5 months. In gonorrhea the male ratio of incidence to prevalence is 4.4, and for the female 4.8, indicating that male gonorrhea patients stay under treatment for 2.7 months and the female gonorrhea patients remain under treatment for 2.5 months.

In the following table a comparison is given of the ratio of incidence to prevalence, or the number of times the total patient population changes in a year to maintain the constant number of cases under treatment, for Baltimore and New Orleans:

*Ratio of incidence to prevalence*

	Male		Female	
	Gonorrhea	Syphilis	Gonorrhea	Syphilis
New Orleans.....	4.4	2.9	4.8	1.6
Baltimore.....	2.9	1.3	2.3	1.1

It will be observed that there is less turnover in the patient population in Baltimore than in New Orleans; that is, the patient remains under treatment for a longer period of time in Baltimore than he does in New Orleans.

**TABLE 6.**—*Annual incidence rates per 1,000 population for early and late syphilis and for acute and chronic gonorrhea based on the number of cases accepted for treatment for the first time during January, 1931, in New Orleans, La.*

Diagnosis	White						Colored						Total					
	Males			Females			Males			Females			Males			Females		
	Early or acute		Late or chronic	Early or acute		Late or chronic	Early or acute		Late or chronic	Early or acute		Late or chronic	Early or acute		Late or chronic	Early or acute		Late or chronic
	Total	Rate		Total	Rate		Total	Rate		Total	Rate		Total	Rate		Total	Rate	
• ANNUAL INCIDENCE RATES PER 1,000 POPULATION																		
Syphilis.....	18.3	11.3	7.0	4.5	2.0	2.5	35.8	20.1	15.7	10.1	5.7	4.4	23.0	13.7	9.3	6.2	3.1	3.1
Gonorrhea.....	37.8	31.6	6.2	11.3	6.8	4.5	19.3	13.7	5.6	8.4	3.6	4.9	32.8	26.7	6.1	10.5	5.9	4.6
ANNUAL NUMBER OF CASES																		
Syphilis.....	2,916	1,800	1,116	768	348	420	2,136	1,200	936	708	396	312	5,052	3,000	2,052	1,476	744	732
Gonorrhea.....	6,036	5,040	996	1,920	1,152	768	1,152	816	336	588	252	336	7,188	5,856	1,332	2,508	1,404	1,104



TABLE 7.—Rate per 1,000 population for syphilis and gonorrhea in cities of 100,000 population or over in the United States

Surveyed city	Population	Rate per 1,000 population	Per cent of patients in public clinics	Surveyed city	Population	Rate per 1,000 population	Per cent of patients in public clinics
New Orleans, La.....	458,762	6.8	50.4	Detroit, Mich.....	1,242,044	12.7	34.4
New York City.....	6,010,533	8.9	37.4	Baltimore, Md.....	804,874	13.3	71.9
Philadelphia, Pa.....	2,064,200	9.1	55.2	Nashville, Tenn.....	138,600	15.2	47.0
Knoxville, Tenn.....	105,400	9.2	52.0	St. Louis, Mo.....	848,100	15.8	22.0
Cleveland, Ohio.....	1,150,824	11.3	41.9	Memphis, Tenn.....	192,000	19.9	39.0

## COMPARISON OF NEW ORLEANS WITH OTHER LARGE CITIES SURVEYED

In the group of 10 cities listed in Table 7, in which a survey of the prevalence of venereal disease has been conducted, it will be noted that New Orleans has comparatively the lowest rate per 1,000 population for venereal diseases under treatment, and ranks fourth among the cities having a high percentage of persons under treatment in public clinics. It is not the opinion of the authors that a low prevalence rate necessarily means a smaller number of persons actually infected in a community. It would seem wiser to question still further the effectiveness of the present control methods. Of course, this lower prevalence rate may be due to more effective control methods and especially adequate free public clinic treatment, but the results of the quackery study in New Orleans lead one to believe that much of it is due to the fact that those persons infected do not seek or receive authorized medical care for their disease.

In the largest free clinic in New Orleans, operated under the auspices of the Charity Hospital, there were 1,011 syphilitic patients and 450 cases of gonorrhea in the out-patient department. However, of this number 249 persons, or 15 per cent of the cases of venereal disease, claimed residence outside the city of New Orleans. Each ward in the hospital was visited and the charts were reviewed to determine the number of patients who were under treatment for gonorrhea or syphilis either as a major disability or as a coexisting disease. In this institution, where 1,756 beds are maintained, there were 216 patients who had either syphilis or gonorrhea on the day of the survey. Charity Hospital is free in all of its departments; but there are several part-pay institutions in New Orleans which treat venereal diseases in their out-patient departments, one of which is Touro Infirmary.

## SUMMARY

In New Orleans a 1-day census showed that 32 per cent of the physicians had one or more cases of venereal disease under treatment. There was practically an even distribution of cases reported in private practice and in public clinics or other institutions.

There were reported 4,820 cases of syphilis and gonorrhea under treatment as of the survey date, February 2, 1931, of which 2,676 were syphilis and 2,144 gonorrhea. The rate was nearly twice as high among the colored population as among the white. The gonorrhea rate for colored females was found to be extremely low. The investigators have no reason to offer for this finding.

There are 90 per cent of the private practice cases in the hands of 15 per cent of the physicians. It is thought, perhaps, that the adequate public clinic facilities for treatment of syphilis and gonorrhea are responsible for the fact that there is so much specialization in these diseases among the private practitioners. Although the concentration of these cases in the care of a few physicians greatly assists in the dissemination of the treatment data on venereal diseases, it is felt that here as in other communities many, if not most, of the early infections are seen first by the family physician, and he should be trained in the early recognition, if not specially in the treatment, of these diseases.

The ratio of incidence to prevalence of syphilis is nearly twice as high for the males as for the females, whereas for gonorrhea it is quite similar for the two sexes.

New Orleans was found to have a lower venereal disease prevalence rate than any of the other 10 large cities in which a survey was conducted. However, in conjunction with the prevalence survey in New Orleans a study of the amount of treatment given by unauthorized medical sources was found to be very high. It also was found that at least one-half of the whites and 80 per cent of the colored attempted either self-treatment or were treated over the drug store counter before applying to a clinic for treatment. For these reasons there is a question as to whether the apparently low prevalence rate in New Orleans is due entirely to the effectiveness of the control methods and the excellent free public clinic facilities or to other reasons. The authors do feel, however, that very complete returns were made from those cooperating in the study.

## THE VALUE OF COMPLETE ROUTINE PHYSICAL EXAMINATION OF PRISONERS<sup>1</sup>

By M. R. KING, *Surgeon, United States Public Health Service*

The "routine physical examination" is now a well-recognized health measure in many fields. It is adaptable to many phases of life and is used extensively in public schools, universities, industries, factories, military and civil services, and elsewhere. It is within a comparatively

<sup>1</sup> Read before the Sixty-first Annual Congress of the American Prison Association, held in Baltimore, Md., Oct. 18-23, 1931.

recent period that the examination of wage earners has created a new field for the physician and established a new basis for business efficiency. The value of the physical examination has been well proved in health, social, and economic fields, where, having stood the test of utility, it has come to stay.

The inmates of our penal and correctional institutions are received from all sections of our country. Practically all races, vocations, and social strata are represented. On arrival, many have physical or mental defects sufficiently marked to render them unfit for duty of any kind, or at least unfit for employment except of a limited nature. Some have venereal or other communicable diseases; others are afflicted with disorders peculiar to their native districts. Soon after arrival most of them must be assigned to prison industries or to other positions throughout the institution. They regularly attend the prison barber shop, dining room, and bath room, either together or in groups. Close association and contact are practically unavoidable in prison life.

There appears to be no substantial reason for permitting the medical standard of our prisons to fall below that set in the ordinary activities of civilian life; and a complete physical examination of all prisoners at the time of admission is as important to secure this standard in prisons as it is to secure it in industries and factories.

The term "complete physical examination" is used only in a relative sense. A routine physical examination which fulfills its purpose and practical ends in its own particular field may be regarded as complete. The standard adopted for prisoners does not necessarily include such scientific measures as blood chemistry, the use of all the numerous tests and resources designed for testing the function and condition of the tissues and organs of the body, or other unusual requirements which the average prison physician is unable to meet. However, such a standard should be complete in the practical sense that it fulfill the purpose for which it is designed—that is, all the requirements peculiar to prison work. Bearing in mind the diversified activities and conditions of prison life—the prison industries, labor gangs, athletic squads, sanitary and medical problems, etc.—it is evident that the standard used must be a fairly broad one, including most of the details listed in the usual examination forms employed in industry, life insurance, military service, and in other fields.

The physical-examination form used in prison work should be so arranged and of such a nature that it serves the examiner as a complete and systematic guide during the conduct of the examination. Such a chart or guide is not only conducive to completeness but also minimizes the possibility of omission. The importance of "system" can not be overemphasized, since probably more errors arise from lack of system than from want of knowledge. Besides the usual items

referring to the various regions of the body, such a chart or form should provide for such routine measures as blood pressure, weight, height, and chest measurements, urinalysis, blood Wassermann, and other laboratory procedures when indicated. It should also provide ample space for recording concise but accurate description of all positive findings.

Inmates requiring further observation and study, such as special laboratory tests, X-ray examinations, orthopedic and neurological examinations, etc., fall within the scope of secondary examinations. If, during the course of a physical examination, a defect is discovered requiring more detailed examination, and if the examiner requires consultation or the opinion of a specialist, he should refer the subject to one of the attending specialists or other member of the medical staff, forwarding to him the data obtained on general examination. The results of the special examination should be recorded on "consultation sheets" or other forms provided for that purpose. If possible, it is best to have a special dental and eye, nose, and throat examination in each case. It is not difficult for properly trained prison physicians to become familiar with the usual methods of physical examination and to practice them systematically. Most of the usual tests employed for the various regions of the body are simple and easily acquired. A complete physical survey by the prison physicians limits the need for attending specialists to border-line and doubtful cases. When the medical staff is sufficiently large, it is helpful to hold frequent conferences for the purpose of presenting and discussing doubtful and obscure cases.

The prison physician is usually acquainted with the institutional life of the prison population as a group. He knows the sanitary conditions, the industrial hazards connected with the prison industries, and other conditions peculiar to prison life. This intimate knowledge of local prison conditions is of value to the prison physicians in formulating reports relative to the health of prisoners and recommendations for duty. Compelling prisoners with pulmonary disorders to work in industries or at trades involving exposure to gas or dust is frequently disastrous to their health. A prisoner placed at hard labor with a serious cardiac disorder is not only receiving excessive punishment during his prison sentence but his life is shortened.

The success or failure of the prisoner in making an adequate mental and occupational adjustment to his prison life is often dependent upon his being properly placed in the institution according to his physical condition. The new inmate can no longer choose his diet or select his sleeping quarters or his vocation. He is assigned to certain duty for certain hours each day regardless of his choice in the matter. Since the prisoner's mode of living and occupation are almost entirely directed and chosen for him, it is only just that when possible he be

given a position in the institution suitable to his physical condition. In this connection the prison physician carries a definite responsibility, since the officials responsible for work assignments are dependent upon the physician's report as to the physical and mental fitness of prisoners.

One of the benefits obtained from the routine examination of prisoners which affects the prison population as a group is the segregation of those afflicted with communicable diseases. This is not always possible at the time of the primary examination. Certain diseases may still be in the incubation period, and for this reason newly admitted men should be confined in quarantine and kept under observation for a period of at least two weeks. Owing to the crowded conditions which exist in most prisons it is necessary for the physician to be especially adept and constantly on the alert to detect such disorders as the acute exanthemata, venereal diseases, and other communicable diseases. The detection of vermin, scabies, ringworm, and similar conditions at the time of admission is of utmost importance in preventing such conditions from gaining a foothold in the institution proper.

One of the principal objects in making physical examinations is to obtain information regarding the health of the individual inmate. There is a growing tendency among our prisons to remove all physical defects possible during prison residence. Many chronic diseases and the majority of handicaps and defects can be detected only by physical examination. The proper cataloging of such conditions forms the basis for a rational medical rehabilitation program. Furthermore, the discovery of chronic diseases permits the early and proper distribution of such cases to the hospital wards for treatment.

The purpose and value of the routine physical examination of prisoners are not limited to the diagnosis of disease or the detection of obvious physical defects. It also embraces the detection of physical impairment and predisposition to disease as well as faults in living habits, the correction of which would have a beneficial effect on the life of the inmate. It is a common error of physicians connected with this type of work to pay but little attention to impairments except those indicative of advanced disease. Much may be accomplished in preventive medicine in prison work if a special effort is made to catalog all minor impairments with the view of correcting them during the inmate's term of imprisonment. In order to accomplish this end it is well to keep in mind the incidence and nature of physical impairments found among the civilian population at large. An analysis by Fisk and Crawford of the impairments found in 10,000 supposedly well adult males, average age of 34 years, in more than 100 industrial plants where physical examinations were conducted, shows the following:

	Per cent
No physical defects or errors in hygiene.....	0
Very minor defects requiring attention or observation.....	10
Minor defects requiring hygienic correction or minor medical, surgical, or dental attention.....	41
Moderate defects requiring medical supervision as well as hygiene correction. Impairment influencing longevity.....	35
Advanced physical impairment requiring systematic medical or surgical attention.....	9
Serious physical condition requiring immediate medical or surgical attention.....	5

The inmates received in our prisons most probably have a higher rate of physical defects than was found in the survey mentioned above. What may be attained in the matter of actual life saving by the proper evaluation and appropriate correction of physical defects and predispositions to disease discovered by periodical physical examination is reflected in an analysis of the mortality rate of policyholders of the Metropolitan Life Insurance Co. A reduction in mortality of 18 per cent was noted for the entire group, and in elderly groups a reduction of 50 per cent. Similar to the civilian population at large many prisoners do not know that they are in poor physical condition, and often when they do become aware of it their disease has markedly progressed, their lives have been shortened, and they ultimately become a permanent burden to themselves, their families, community, or the State. Every disease has a starting point and its cure is often dependent upon the stage of its progress at the time it is detected. The discovery of incipient or early disease processes by means of the physical examination affords the subject an opportunity to receive early warning, advice, and treatment.

The careful physical examination inspires confidence and is appreciated by the average prisoner. Frequently inmates are examined who are unduly apprehensive concerning some trivial defect which they have been led to believe is serious. Careful study and proper counsel often suffices to dispel the cloud of anxiety under which they have lived. However, nothing is gained and frequently harm is done by informing them of the discovery of permanent defects of which they are unaware, defects which are not disabling or a potential source of trouble. On the other hand, when actual disease exists, it is usually helpful to explain clearly the nature of the disorder and the necessary remedial measure, thus encouraging cooperation at the outset.

Although it is not possible to demonstrate the so-called physical stigmata of degeneration in all persons following criminal careers as was once thought by some authorities, still it is true that certain physical handicaps are causal factors in delinquency. This is especially true in individuals of the unstable type, with highly sensitive nervous systems, who chafe and fret under bodily discomfort of any kind. Physical impairment in such persons tends to interfere with their

ability to concentrate, with continuity of purpose, and with the ability to compete on an equal basis with their fellow men. Often the tendency is for them to follow the line of least resistance, resorting to delinquency and crime for a livelihood. Many others of this type resort to drug addiction as an escape from bodily discomfort and the reality of life and eventually come into conflict with the law. The removal of these irritating defects frequently is one of the major factors in the rehabilitation of such persons.

The periodic physical examination of all prisoners is not always practical or possible in all prisons, because of limitations in the medical staff and pressure of other duties. However, periodic examinations should bear a close relationship to the expiration of sentence, parole, pardon, transfer, or other disposition of inmates. The observation of the physical condition and health of any group of prisoners over a period of years is beneficial not only to them but also to the medical department. Thus an excellent opportunity is given to observe over an extended period of time the comparative value of certain data pertaining to health and longevity as well as a means of checking the final results of remedial measures. Finally, the periodic examination of at least certain groups of prisoners, similar to the routine examination of all new inmates, is of value to the prison administration. For after all, the morale and degree of contentment are dependent in no small way upon the proper distribution, and redistribution if necessary, of prisoners according to their physical and mental fitness, in order that they will not become a menace to themselves, to property, or to others.

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### COURT DECISION RELATING TO PUBLIC HEALTH

*Narcotic drug law construed.*—(Washington Supreme Court; *State v. Helmer*, 8 P. (2d) 412; decided Feb. 11, 1932.) A statute made it unlawful to possess narcotic drugs unless such drugs had been lawfully obtained. The law also provided, in part, as follows:

In any prosecution for the violation of the provisions of this act it shall not be necessary for the indictment, complaint, or information to set forth any negative allegation, nor for the plaintiff to prove that the defendant does not come within any of the exceptions herein contained; but such exceptions shall be considered as a matter of defense and the burden shall be upon the defendant to show that he comes within such exceptions.

In a prosecution for unlawful possession of a narcotic drug, the supreme court held that, while the State had the burden of proving beyond a reasonable doubt that the defendant possessed the drug, if the defendant desired to rest his defense upon his lawfully obtaining possession of the drug, he had the burden of proving such lawful acquisition to the extent of creating in the minds of the jury a reasonable doubt as to whether or not he had unlawfully acquired possession of the drug.

## DEATHS DURING WEEK ENDED MAY 7, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended May 7, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 7, 1932	Corresponding week, 1931
Policies in force.....	73, 403, 421	75, 180, 287
Number of death claims.....	14, 370	13, 955
Death claims per 1,000 policies in force, annual rate.....	10. 2	9. 7
Death claims per 1,000 policies, first 18 weeks of year, annual rate.....	10. 5	11. 0

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 7, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended May 7, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 18 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (35 cities).....	8, 290	11. 8	695	4 57	12. 1	664	12. 5	13. 6
Akron.....	62	12. 2	5	62	9. 5	1	7. 8	8. 5
Albany.....	34	13. 6	4	82	13. 3	3	14. 8	15. 5
Atlanta.....	66	12. 2	7	68	16. 9	7	14. 1	16. 1
White.....	34	9. 5	2	29	11. 9	4	11. 1	12. 8
Colored.....	32	17. 5	5	143	26. 9	3	20. 0	22. 6
Baltimore.....	209	13. 3	14	50	13. 1	14	14. 7	16. 8
White.....	162	12. 6	13	59	11. 8	11	13. 6	15. 4
Colored.....	47	16. 4	1	16	19. 2	3	19. 5	23. 3
Birmingham.....	66	12. 5	5	52	13. 4	8	12. 1	15. 4
White.....	31	9. 4	3	49	9. 4	5	9. 9	12. 0
Colored.....	35	17. 4	2	54	19. 8	3	15. 8	21. 1
Boston.....	233	15. 5	23	70	14. 3	19	15. 7	16. 1
Bridgeport.....	29	10. 3	5	89	9. 2	6	12. 0	12. 6
Buffalo.....	143	12. 7	13	62	14. 1	12	14. 0	15. 0
Cambridge.....	24	11. 0	3	62	16. 9	2	14. 3	13. 9
Camden.....	35	15. 4	4	70	16. 2	10	16. 2	17. 4
Canton.....	28	13. 5	2	50	14. 2	2	10. 5	11. 4
Chicago.....	716	10. 6	73	72	10. 9	39	10. 9	11. 8
Cincinnati.....	118	13. 3	7	45	15. 7	7	16. 4	17. 9
Cleveland.....	196	11. 1	14	45	11. 2	19	12. 1	12. 6
Columbus.....	66	15. 0	6	90	16. 6	4	14. 6	15. 0
Dallas.....	49	9. 1	2	6	9. 0	7	11. 2	12. 5
White.....	32	7. 2	1	1	7. 9	6	10. 3	11. 0
Colored.....	17	18. 3	1	1	14. 3	1	15. 9	19. 6
Dayton.....	45	9. 9	1	14	11. 3	0	11. 7	11. 3
Denver.....	81	14. 4	6	59	13. 9	9	16. 0	15. 5
Des Moines.....	29	10. 4	2	34	10. 1	2	12. 5	11. 9
Detroit.....	289	8. 8	26	47	8. 4	18	8. 5	9. 6
Duluth.....	21	10. 8	2	58	12. 5	1	10. 8	11. 7
El Paso.....	26	12. 7	4	1	16. 9	7	14. 2	17. 4
Erie.....	26	11. 4	3	64	10. 6	1	12. 2	11. 7
Evansville.....	17	8. 4	1	33	12. 0	1	10. 1	12. 1
Fall River.....	29	13. 2	5	133	13. 1	2	13. 3	13. 5
Flint.....	21	6. 5	3	44	11. 8	5	8. 7	8. 2
Fort Wayne.....	27	11. 6	2	52	14. 5	0	10. 3	11. 0
Fort Worth.....	31	9. 5	6	1	13. 7	3	10. 8	12. 5
White.....	24	8. 7	6	1	10. 4	3	10. 4	11. 9
Colored.....	7	13. 7	0	1	30. 7	0	12. 9	15. 3
Grand Rapids.....	33	9. 9	6	102	11. 5	2	9. 7	9. 9
Houston.....	72	11. 6	6	1	10. 9	13	11. 2	11. 7
White.....	45	9. 9	5	1	11. 0	12	10. 5	10. 8
Colored.....	27	16. 5	1	1	10. 7	1	13. 2	14. 1

See footnotes at end of table.



Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended May 7, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 7, 1932				Corresponding week 1931		Death rate <sup>2</sup> for the first 18 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>3</sup>	Deaths under 1 year	1932	1931
Indianapolis <sup>4</sup>	86	12.0	3	24	14.1	4	13.8	15.0
White	77	12.3	3	25	13.5	3	13.4	14.5
Colored	9	10.2	0	0	18.5	1	16.0	18.7
Jersey City	85	13.9	9	75	10.0	5	12.1	13.4
Kansas City, Kans. <sup>4</sup>	30	12.7	2	41	10.2	5	13.0	14.9
White	26	13.6	1	27	10.0	5	12.7	13.8
Colored	4	8.8	1	12	11.1	0	14.0	19.6
Kansas City, Mo.	72	9.0	3	84	12.0	6	13.0	15.0
Knoxville <sup>4</sup>	20	9.3	1	25	12.9	1	12.8	14.2
White	15	8.4	1	28	12.6	1	11.7	13.2
Colored	5	14.3	0	0	14.6	0	18.7	19.4
Long Beach	24	7.8	2	52	9.9	4	10.0	10.5
Los Angeles	283	10.7	14	42	11.0	21	11.3	11.5
Louisville <sup>4</sup>	73	12.4	7	64	12.5	8	14.3	16.6
White	58	11.6	7	73	12.4	5	12.9	14.9
Colored	15	16.4	0	0	13.1	3	22.1	25.5
Lowell <sup>1</sup>	30	15.6	5	131	13.0	5	14.8	14.0
Lynn	17	8.6	0	0	7.6	1	11.7	11.6
Memphis <sup>4</sup>	73	14.5	5	54	14.1	3	16.8	17.6
White	40	12.8	4	68	9.8	2	13.0	14.5
Colored	33	17.1	1	30	21.1	1	23.0	22.5
Miami <sup>4</sup>	21	9.6	3	81	10.2	1	12.5	13.9
White	14	8.3	0	0	11.4	0	11.6	13.1
Colored	7	14.5	3	302	6.2	1	15.7	16.7
Milwaukee	115	10.0	11	52	10.5	13	9.6	10.5
Minneapolis	104	11.3	6	39	12.5	12	11.3	12.1
Nashville <sup>4</sup>	54	18.0	5	75	14.4	3	15.5	18.0
White	36	16.5	5	98	12.5	1	14.3	15.6
Colored	18	21.9	0	0	19.5	2	18.8	24.4
New Bedford <sup>1</sup>	21	9.8	4	115	13.0	3	13.3	13.4
New Haven	27	8.7	1	20	10.9	2	13.5	13.6
New Orleans <sup>4</sup>	122	13.4	17	97	14.9	11	15.9	18.6
White	68	10.5	5	44	13.0	6	13.5	15.2
Colored	54	20.5	12	195	19.7	5	21.7	27.1
New York	1,525	11.0	132	59	11.5	130	11.9	13.1
Bronx Borough	223	8.4	14	40	8.0	15	8.8	9.4
Brooklyn Borough	508	9.9	44	49	10.3	51	11.1	12.1
Manhattan Borough	566	16.7	54	77	18.6	54	18.2	20.0
Queens Borough	169	7.3	17	71	6.6	6	7.6	8.4
Richmond Borough	59	18.4	3	59	13.4	4	14.6	14.2
Newark, N. J.	99	11.5	9	49	12.3	6	12.0	13.4
Oakland	68	11.9	3	38	8.0	4	11.4	11.4
Oklahoma City	56	14.2	5	68	12.2	1	10.9	12.3
Omaha	52	12.4	3	34	16.1	4	14.6	14.5
Paterson	33	12.4	2	36	12.4	5	13.7	15.8
Peoria	16	7.5	1	28	13.9	2	12.1	13.8
Philadelphia	511	13.5	34	53	12.2	34	14.0	15.7
Pittsburgh	188	14.4	33	151	16.3	22	14.5	17.6
Portland, Oreg.	48	8.1	0	9	12.4	1	12.1	12.5
Providence	65	13.3	4	39	15.3	9	14.4	15.0
Richmond <sup>4</sup>	58	16.4	4	60	14.4	3	14.9	17.7
White	39	15.4	3	67	15.5	2	12.6	15.3
Colored	19	18.8	1	46	11.8	1	20.6	28.3
Rochester	93	14.5	4	38	10.8	3	13.0	13.6
St. Louis	232	14.6	12	43	12.2	11	14.8	17.7
St. Paul	69	12.9	5	53	11.3	1	11.5	11.7
Salt Lake City <sup>1</sup>	32	11.5	1	16	11.7	1	11.5	12.9
San Antonio	71	15.0	18	---	17.4	19	14.7	15.8
San Diego	37	11.8	4	87	11.7	1	14.8	14.9
San Francisco	148	11.7	6	42	13.4	6	13.4	14.1
Schenectady	25	13.5	2	58	9.2	2	12.0	11.9
Seattle	94	13.1	4	40	12.2	3	12.4	12.9
Somerville	12	5.9	2	80	14.9	3	10.4	11.3
South Bend	19	8.9	2	58	6.8	1	8.3	9.1
Spokane	28	12.5	2	53	9.0	1	12.6	12.1
Springfield, Mass.	25	8.5	2	34	17.4	5	12.0	13.8
Syracuse	56	13.5	2	26	12.2	5	12.7	12.9
Tacoma	29	14.0	3	83	8.3	0	13.4	14.1
Tampa <sup>4</sup>	26	12.6	1	29	7.4	2	12.5	13.5
White	20	12.3	0	0	7.6	1	12.0	12.5
Colored	6	13.8	1	158	7.0	1	14.1	17.9

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 7, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended May 7, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 18 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Toledo.....	77	13.4	7	76	10.2	4	12.8	13.2
Trenton.....	34	14.3	2	40	18.9	3	17.6	19.0
Utica.....	46	23.4	6	171	21.9	4	17.6	18.6
Washington, D. C. <sup>6</sup>	154	16.3	17	95	14.4	12	17.5	18.0
White.....	94	13.8	9	74	12.2	7	15.7	15.3
Colored.....	60	22.9	8	142	20.6	5	22.4	25.0
Waterbury.....	22	11.3	1	33	9.3	2	10.4	11.1
Wilmington, Del. <sup>7</sup>	26	12.8	0	0	14.2	2	17.6	16.5
Worcester.....	56	14.7	2	28	14.3	5	13.5	15.0
Yonkers.....	20	7.4	1	26	9.0	1	8.6	9.0
Youngstown.....	42	12.5	1	16	6.9	1	10.0	11.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended May 14, 1932, and May 16, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 14, 1932, and May 16, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931
<b>New England States:</b>								
Maine.....	4	3	5	1	202	9	0	1
New Hampshire.....					16	76	0	0
Vermont.....					190	7	0	0
Massachusetts.....	33	26	8	1	1,015	570	2	2
Rhode Island.....	3	3			51	80	0	0
Connecticut.....	3	17	7	2	296	699	1	1
<b>Middle Atlantic States:</b>								
New York.....	97	131	20	11	2,437	3,261	5	14
New Jersey.....	33	42	14	5	917	1,124	2	8
Pennsylvania.....	80				1,937	3,635	9	9
<b>East North Central States:</b>								
Ohio.....	30	50	86	42	3,984	1,439	1	6
Indiana.....	17	12	15	5	123	1,048	9	7
Illinois.....	61	126	60	3	1,428	2,081	6	19
Michigan.....	11	34	6	7	2,715	263	3	9
Wisconsin.....	6	17	31	17	2,629	732	0	3
<b>West North Central States:</b>								
Minnesota.....	6	13			51	400	1	1
Iowa.....	11	4			9	58	1	0
Missouri.....	23	25	4	10	127	452	3	5
North Dakota.....	18	9			14	20	1	0
South Dakota.....	1	7			8	59	0	0
Nebraska.....	12	4		4	4	11	0	0
Kansas.....	2	23	1	5	496	99	0	1
<b>South Atlantic States:</b>								
Delaware.....					2	124	0	0
Maryland <sup>1</sup> .....	10	16	17	9	65	1,169	1	3
District of Columbia.....	7	8		1	26	353	2	2
Virginia.....							1	
West Virginia.....	14	8	39	17	234	79	0	0
North Carolina.....	20	17	172	10	830	948	2	1
South Carolina <sup>2</sup> .....	7	11	635	391	180	134	0	0
Georgia <sup>3</sup> .....	7	12	86	57	73	186	1	1
Florida.....	5	7	7	2	9	221	0	0

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended May 14, 1932, 18 cases: 1 case in South Carolina, 5 cases in Georgia, 3 cases in Alabama, and 9 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended May 14, 1932, and May 16, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931
<b>East South Central States:</b>								
Kentucky.....	10	—	52	—	41	88	2	4
Tennessee.....	7	4	144	21	22	26	5	7
Alabama.....	10	9	47	58	16	198	2	7
Mississippi.....	5	5	—	—	—	—	0	0
<b>West South Central States:</b>								
Arkansas.....	13	1	13	16	5	48	0	1
Louisiana.....	27	16	5	50	82	2	1	4
Oklahoma.....	6	8	50	96	10	33	2	0
Texas.....	16	21	19	55	563	45	0	0
<b>Mountain States:</b>								
Montana.....	—	1	1	—	149	5	2	0
Idaho.....	—	—	—	—	2	1	0	0
Wyoming.....	1	—	—	—	27	2	0	0
Colorado.....	5	6	—	—	132	100	1	1
New Mexico.....	10	1	—	1	36	84	0	0
Arizona.....	9	3	2	8	—	31	0	1
Utah.....	—	2	—	5	2	5	0	0
<b>Pacific States:</b>								
Washington.....	3	4	—	—	258	108	1	0
Oregon.....	5	11	36	18	282	82	1	1
California.....	66	83	57	53	717	1,174	2	7
<b>Total.....</b>	<b>714</b>	<b>709</b>	<b>1,633</b>	<b>981</b>	<b>22,412</b>	<b>21,369</b>	<b>70</b>	<b>120</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931
<b>New England States:</b>								
Maine.....	0	0	23	27	0	0	6	2
New Hampshire.....	0	0	60	3	0	0	0	0
Vermont.....	0	0	11	3	10	0	0	0
Massachusetts.....	0	0	461	375	0	0	5	8
Rhode Island.....	0	0	47	69	0	0	0	0
Connecticut.....	0	0	97	42	0	0	2	8
<b>Middle Atlantic States:</b>								
New York.....	1	4	1,556	887	1	3	6	17
New Jersey.....	0	0	341	290	0	0	2	5
Pennsylvania.....	0	3	707	542	0	0	5	13
<b>East North Central States:</b>								
Ohio.....	1	1	440	612	17	29	5	9
Indiana.....	0	0	67	166	6	138	2	1
Illinois.....	2	1	407	576	6	94	10	4
Michigan.....	1	0	506	436	14	27	2	4
Wisconsin.....	2	1	84	144	1	15	2	0
<b>West North Central States:</b>								
Minnesota.....	0	0	98	70	2	6	4	4
Iowa.....	0	0	38	69	26	71	0	0
Missouri.....	0	1	81	216	5	29	1	2
North Dakota.....	0	0	8	15	1	3	0	0
South Dakota.....	0	1	2	9	0	9	0	0
Nebraska.....	0	0	24	44	11	64	1	0
Kansas.....	0	0	42	55	6	75	2	4
<b>South Atlantic States:</b>								
Delaware.....	0	0	11	17	0	0	0	0
Maryland.....	0	0	77	65	0	0	0	0
District of Columbia.....	0	0	28	14	0	0	0	0
Virginia.....	—	—	—	—	—	—	—	—
West Virginia.....	0	0	18	86	0	3	5	3
North Carolina.....	0	0	41	55	2	1	4	7
South Carolina.....	0	1	5	8	0	0	12	6
Georgia.....	0	0	8	57	2	0	19	10
Florida.....	0	0	2	6	9	2	10	0

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 14, 1932, 18 cases: 1 case in South Carolina, 5 cases in Georgia, 3 cases in Alabama, and 9 cases in Texas.

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 14, 1932, and May 16, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931	Week ended May 14, 1932	Week ended May 16, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	32	45	6	36	10	6
Tennessee.....	0	0	43	17	15	7	9	5
Alabama <sup>1</sup> .....	1	4	10	12	10	11	13	6
Mississippi.....	0	0	4	18	11	28	5	6
<b>West South Central States:</b>								
Arkansas.....	0	0	0	13	6	43	0	5
Louisiana.....	0	0	13	26	9	18	12	16
Oklahoma <sup>4</sup> .....	0	0	8	27	7	52	5	7
Texas <sup>1</sup> .....	1	0	18	28	49	49	3	5
<b>Mountain States:</b>								
Montana.....	0	0	15	14	4	1	1	3
Idaho.....	0	0	3	6	2	1	1	1
Wyoming.....	0	0	12	17	0	1	0	0
Colorado.....	0	0	20	26	5	5	0	0
New Mexico.....	0	0	11	6	1	2	1	3
Arizona.....	0	0	1	2	0	0	0	1
Utah <sup>1</sup> .....	0	0	3	7	0	0	0	0
<b>Pacific States:</b>								
Washington.....	2	0	27	27	25	18	0	6
Oregon.....	0	0	7	33	9	18	2	4
California.....	4	4	174	151	9	27	5	8
<b>Total.....</b>	<b>15</b>	<b>21</b>	<b>5, 643</b>	<b>5, 405</b>	<b>287</b>	<b>886</b>	<b>172</b>	<b>190</b>

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 14, 1932, 18 cases: 1 case in South Carolina, 5 cases in Georgia, 3 cases in Alabama, and 9 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Meas- les	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<b>March, 1932</b>										
Arkansas.....	2	33	1, 067	27	10	72	0	36	98	3
<b>April, 1932</b>										
Georgia.....	8	47	787	76	173	35	1	46		71
Iowa.....	4	31			13		2	234	176	8
Maine.....	3	4	62		1, 130		1	167	0	2
Massachusetts.....	12	131	38	2	3, 106	2	4	2, 249	0	7
New Jersey.....	4	118	143		2, 731		2	1, 341	0	6
Puerto Rico.....		48	37	2, 188	118	2	2		0	15
Tennessee.....	17	47	3, 310	48	519	32	3	182	94	31
Wyoming.....			2		69		0	26	4	6

## March, 1932

Arkansas:	Cases
Chicken pox.....	73
Mumps.....	116
Trachoma.....	4
Whooping cough.....	62

## April, 1932

Anthrax:	
Georgia.....	1
Chicken pox:	
Georgia.....	219
Iowa.....	143
Maine.....	122
Massachusetts.....	1,002
New Jersey.....	1,088
Puerto Rico.....	76
Tennessee.....	159
Wyoming.....	5
Conjunctivitis:	
Iowa.....	2
Maine.....	2
Wyoming.....	3
Dysentery:	
Georgia.....	21
Massachusetts.....	1
Puerto Rico.....	12
Tennessee.....	2
Filariasis:	
Puerto Rico.....	8
German measles:	
Iowa.....	52
Maine.....	527
Massachusetts.....	100
New Jersey.....	71
Tennessee.....	324
Impetigo contagiosa:	
Iowa.....	2
Tennessee.....	6
Lead poisoning:	
New Jersey.....	1
Leprosy:	
Puerto Rico.....	2
Lethargic encephalitis:	
Georgia.....	1
Maine.....	1
Massachusetts.....	1
New Jersey.....	2
Tennessee.....	4
Mumps:	
Georgia.....	191
Iowa.....	114
Maine.....	76
Massachusetts.....	1,390
New Jersey.....	1,132
Puerto Rico.....	10
Tennessee.....	166
Wyoming.....	59
Ophthalmia neonatorum:	
Maine.....	1
Massachusetts.....	98

## Ophthalmia neonatorum—Continued.

	Cases
New Jersey.....	3
Puerto Rico.....	4
Tennessee.....	3
Paratyphoid fever:	
Georgia.....	1
Massachusetts.....	3
Puerto Rico.....	3
Tennessee.....	4
Puerperal septicemia:	
Puerto Rico.....	2
Tennessee.....	1
Rocky Mountain spotted or tick fever:	
Wyoming.....	5
Scabies:	
Tennessee.....	4
Septic sore throat:	
Georgia.....	21
Maine.....	2
Massachusetts.....	39
Tennessee.....	1
Tetanus.	
Massachusetts.....	2
New Jersey.....	1
Puerto Rico.....	5
Tennessee.....	2
Tetanus, infantile:	
Puerto Rico.....	7
Trachoma:	
Iowa.....	2
Massachusetts.....	7
Puerto Rico.....	4
Tennessee.....	100
Trichinosis:	
Massachusetts.....	1
Tularaemia:	
Georgia.....	5
Tennessee.....	4
Typhus fever:	
Georgia.....	25
Undulant fever:	
Georgia.....	2
Iowa.....	6
Maine.....	1
Massachusetts.....	1
New Jersey.....	2
Tennessee.....	1
Vincent's angina:	
Iowa.....	1
Maine.....	16
Whooping cough:	
Georgia.....	145
Iowa.....	105
Maine.....	123
Massachusetts.....	899
New Jersey.....	1,266
Puerto Rico.....	183
Tennessee.....	554
Wyoming.....	4

# Cases of Certain Communicable Diseases Reported for the Month of March, 1932, by State Health Officers

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	110	13	1,403	46	109	0	59	2	121
New Hampshire.....		5			155	0		0	
Vermont.....	112	5	495	831	65	22	19	1	180
Massachusetts.....	1,020	176	2,418	1,411	2,335	0	525	9	1,063
Rhode Island.....	49	40	2,176	373	323	0	69	1	71
Connecticut.....	507	25	978	312	546	8	116	1	579
New York.....	2,730	504	10,381	1,793	7,810	12	1,751	34	2,560
New Jersey.....	1,256	152	1,219	846	1,459	0	363	11	1,259
Pennsylvania.....	3,916	566	9,524	3,993	3,707	7	817	44	3,593
Ohio.....	1,486	206	6,270	1,010	1,884	194	584	20	3,100
Indiana.....	857	169	241	437	594	40	192	11	462
Illinois.....	1,352	354	1,602	396	1,828	65	1,084	26	1,826
Michigan.....	1,119	132	3,760	1,360	2,056	45	518	35	1,097
Wisconsin.....	1,116	44	2,245	936	389	3	139	13	881
Minnesota.....	176	51	68		546	9	198	6	190
Iowa.....	127	50	13	174	263	100	36	7	102
Missouri.....	381	130	337	308	288	41	173	11	610
North Dakota.....	38	8	201	65	74	12	8		21
South Dakota.....	81	19	117	32	51	31	24	4	105
Nebraska.....	122	30	70	101	138	43	6	3	48
Kansas.....	473	69	1,038	478	238	29	181	5	400
Delaware.....	27	16	4	48	75	0	8	1	111
Maryland.....	665	86	234	570	633		199	14	723
District of Columbia.....	178	45	10	0	146	0	79		99
Virginia.....	666	138	516		230	1	199	29	1,647
West Virginia.....	158	64	2,089	9	136	22	51	36	374
North Carolina.....	580	90	2,320		240	9		24	1,563
South Carolina.....	182	91	420	259	32	3	107	32	178
Georgia.....	94	34	159	169	33		97	42	81
Florida.....	45	48	16	19	27	1	40	38	44
Kentucky <sup>1</sup> .....									
Tennessee.....	189	52	609	121	115	71	164	36	864
Alabama.....	163	58	23	89	82	45	410	27	146
Mississippi.....	590	55	36	206	58	164	114	26	894
Arkansas.....	73	33	10	116	36	98	13	3	62
Louisiana.....	46	115	639	2	73	15	128	64	154
Oklahoma <sup>1</sup> .....	49	67	128	33	96	101	29	11	63
Texas.....		204			165			16	
Montana.....	72	2	498	26	148	2	55	8	81
Idaho.....	37	6	7	29	35	15	10	6	8
Wyoming.....	15	3	18	93	34	5	1	6	6
Colorado.....	401	28	552	338	173	3	75	4	128
New Mexico.....	49	54	380	32	47	2	60	2	79
Arizona.....	178	11	7	11	33	1	87	4	33
Utah <sup>1</sup> .....									
Nevada.....	72	2	4		6	4	3	4	14
Washington.....	333	14	2,723	116	142	121	105	5	131
Oregon.....	169	16	709	94	91	63	59	7	101
California.....	4,966	330	2,732	950	771	64	1,209	38	1,440

<sup>1</sup> Reports received weekly.<sup>2</sup> Pulmonary.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.

## Case Rates per 100,000 Population (Annual Basis) for the Month of March, 1932

State	Chicken pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small- pox	Tuber- cu- losis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	162	19	2,065	68	160	0	87	3	178
New Hampshire.....		13			394	0		0	
Vermont.....	367	16	1,623	1,086	213	72	62	3	492
Massachusetts.....	280	48	664	387	641	0	144	2	262
Rhode Island.....	83	68	3,681	631	546	0	117	2	120
Connecticut.....	366	18	706	225	394	6	84	1	418
New York.....	250	46	952	164	717	1	161	3	237
New Jersey.....	357	43	346	240	415	0	112	3	358
Pennsylvania.....	474	69	1,154	484	449	1	99	5	435
Ohio.....	260	36	1,095	176	329	34	102	3	541
Indiana.....	129	61	87	157	214	14	69	4	169
Illinois.....	205	54	243	60	278	10	165	6	277
Michigan.....	265	31	889	322	486	11	123	8	260
Wisconsin.....	442	17	890	371	154	1	55	5	349
Minnesota.....	80	23	31		249	4	90	3	87
Iowa.....	60	24	6	83	125	48	17	3	49
Missouri.....	123	42	109	99	93	13	56	4	197
North Dakota.....	66	14	347	112	128	21	14		36
South Dakota.....	52	32	197	54	86	52	40	7	179
Nebraska.....	104	26	60	86	117	37	5	3	41
Kansas.....	295	43	647	298	148	18	82	3	249
Delaware.....	132	78	20	235	367	0	39	5	544
Maryland.....	403	61	167	407	452		142	10	616
District of Columbia.....	425	108	24	0	349	0	189		237
Virginia.....	323	67	250		112	0	96	14	799
West Virginia.....	100	43	1,400	6	91	15	34	24	251
North Carolina.....	211	33	843		87	3		9	568
South Carolina.....	123	62	284	175	22	2	72	22	120
Georgia.....	38	14	65	60	13		39	17	33
Florida.....	35	37	12	15	21	1	31	29	34
Kentucky <sup>1</sup> .....									
Tennessee.....	84	23	271	54	51	32	73	16	169
Alabama.....	72	26	10	39	36	20	180	12	64
Mississippi.....	342	32	21	119	34	95	66	16	518
Arkansas.....	46	21	6	73	23	62	18	2	39
Louisiana.....	25	63	352	1	40	8	171	35	85
Oklahoma <sup>2</sup> .....	28	38	72	19	54	57	16	6	86
Texas.....		40			33			3	
Montana.....	158	4	1,094	57	325	4	121	18	178
Idaho.....	98	16	18	77	92	40	126	16	21
Wyoming.....	77	15	92	477	175	26	15	31	81
Colorado.....	452	82	622	381	195	3	84	5	144
New Mexico.....	134	148	1,041	88	129	5	164	5	216
Arizona.....	469	29	18	29	87	3	229	11	87
Utah <sup>1</sup> .....									
Nevada.....	914	25	51		76	51	188	51	178
Washington.....	247	10	2,022	86	106	90	78	4	97
Oregon.....	204	19	858	114	110	75	71	8	122
California.....	983	65	541	188	153	13	239	8	255

<sup>1</sup> Reports received weekly.<sup>2</sup> Pulmonary.<sup>3</sup> Exclusive of Oklahoma City and Tulsa.



## ADMISSIONS TO HOSPITALS FOR THE INSANE, SEPTEMBER, 1930

Reports for the month of September, 1930, showing new admissions to hospitals for the care and treatment of the insane were received by the Public Health Service from 113 hospitals, located in 36 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 177,176 patients on September 30, 1930, 94,661 males and 82,515 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of September, 1930, by psychoses:

	Male	Female	Total
1. Traumatic psychoses.....	12	3	15
2. Senile psychoses.....	174	119	293
3. Psychoses with cerebral arteriosclerosis.....	193	95	288
4. General paralysis.....	199	52	251
5. Psychoses with cerebral syphilis.....	34	12	46
6. Psychoses with Huntington's chorea.....	0	2	2
7. Psychoses with brain tumor.....	5	0	5
8. Psychoses with other brain or nervous disease.....	22	17	39
9. Alcoholic psychoses.....	123	17	140
10. Psychoses due to drugs and other exogenous toxins.....	13	9	22
11. Psychoses with pellagra.....	11	23	34
12. Psychoses with other somatic diseases.....	26	46	72
13. Manic-depressive psychoses.....	181	246	427
14. Involution melancholia.....	30	47	77
15. Dementia præcox (schizophrenia).....	349	279	628
16. Paranoia and paranoid conditions.....	28	24	52
17. Epileptic psychoses.....	49	28	77
18. Psychoneuroses and neuroses.....	24	36	60
19. Psychoses with psychopathic personality.....	18	11	29
20. Psychoses with mental deficiency.....	64	45	109
21. Undiagnosed psychoses.....	110	88	198
22. Without psychosis.....	192	53	245
Total.....	1,857	1,252	3,109

During the month of September, 1930, there were 3,109 new admissions to the hospitals, 59.7 per cent of these new admissions being males and 40.3 per cent females, the ratio being 148 males per 100 females. Four hundred and forty-three of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,666 new admissions for whom provisional diagnoses were made. Of these 2,666 patients, cases of dementia præcox constituted 23.6 per cent; manic-depressive psychoses, 16.0 per cent; senile psychoses, 11.0 per cent; psychoses with cerebral arteriosclerosis, 10.8 per cent; and general paralysis, 9.4 per cent. These five classes accounted for 70.8 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on September 30, 1930:

	Male	Female	Total
Patients on books Sept. 30, 1930:			
In hospitals.....	86,076	75,313	161,389
On parole or otherwise absent, but still on books.....	8,585	7,202	15,787
Total.....	94,661	82,515	177,176

Of the 177,176 patients, 8,585 males and 7,202 females were on parole or otherwise absent but still on the books at the end of the month, 9.1 per cent of the males, 8.7 per cent of the females, and 8.9 per cent of the total number of patients.

#### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 94 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 32,265,000. The estimated population of the 87 cities reporting deaths is more than 30,705,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended May 7, 1932, and May 9, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	702	877	---
94 cities.....	271	404	676
Measles:			
46 States.....	19,138	19,806	---
94 cities.....	7,934	8,195	---
Meningococcus meningitis:			
46 States.....	73	116	---
94 cities.....	29	60	---
Poliomyelitis:			
46 States.....	17	25	---
Scarlet fever:			
46 States.....	5,548	5,367	---
94 cities.....	2,828	2,460	1,414
Smallpox:			
46 States.....	306	784	---
94 cities.....	41	90	58
Typhoid fever:			
46 States.....	148	168	---
94 cities.....	30	27	34
<i>Deaths reported</i>			
Influenza and pneumonia:			
87 cities.....	698	773	---
Smallpox:			
87 cities.....	0	0	---

## City reports for week ended May 7, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated ex- pectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	1	0	0	-----	0	2	3	1
New Hampshire:								
Concord.....	0	0	0	-----	0	1	0	0
Manchester.....	0	0	0	-----	0	0	0	1
Nashua.....	0	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	1	0	6	0
Burlington.....	0	0	0	-----	0	2	0	0
Massachusetts:								
Boston.....	53	26	9	1	0	132	128	26
Fall River.....	3	2	0	-----	0	73	1	5
Springfield.....	15	2	0	-----	0	153	4	0
Worcester.....	12	3	2	-----	0	4	6	5
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	1	5	3	-----	0	34	2	7
Connecticut:								
Bridgeport.....	1	3	0	-----	0	18	0	1
Hartford.....	3	3	0	-----	0	1	8	6
New Haven.....	18	1	0	-----	0	0	22	1
MIDDLE ATLANTIC								
New York:								
Buffalo.....	37	10	0	-----	0	57	0	13
New York.....	249	227	92	16	10	457	210	188
Rochester.....	12	3	0	-----	0	38	11	10
Syracuse.....	7	1	0	-----	0	272	4	1
New Jersey:								
Camden.....	5	4	0	-----	0	0	0	1
Newark.....	45	12	5	3	0	27	198	8
Trenton.....	1	2	0	-----	0	4	0	2
Pennsylvania:								
Philadelphia.....	117	57	8	7	4	8	52	35
Pittsburgh.....	31	15	2	1	4	213	25	23
Reading.....	13	1	2	-----	0	5	0	4
Scranton.....	0	-----	2	-----	-----	7	0	-----
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	8	5	3	-----	2	1	0	9
Cleveland.....	95	22	7	26	2	1,250	100	16
Columbus.....	-----	3	-----	-----	-----	-----	-----	-----
Toledo.....	29	3	2	1	1	33	1	4
Indiana:								
Fort Wayne.....	1	1	6	-----	1	5	0	2
Indianapolis.....	31	3	0	-----	0	25	194	9
South Bend.....	0	1	0	-----	0	4	0	6
Terre Haute.....	7	0	0	-----	0	24	0	2
Illinois:								
Chicago.....	157	77	27	5	3	958	16	59
Springfield.....	7	0	2	-----	0	0	6	1

## City reports for week ended May 7, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CEN- TRAL—continued								
Michigan:								
Detroit.....	81	40	9	4	0	821	57	20
Flint.....	23	2	0	5	0	288	22	6
Grand Rapids.....	5	1	0	—	0	106	12	2
Wisconsin:								
Kenosha.....	1	0	0	—	0	162	1	0
Madison.....	5	0	0	—	—	1	0	—
Milwaukee.....	75	9	1	—	0	1,476	22	11
Racine.....	17	1	0	—	0	393	36	0
Superior.....	2	0	0	—	0	0	13	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	5	0	0	—	0	0	3	0
Minneapolis.....	16	10	4	—	1	17	37	3
St. Paul.....	2	7	0	—	0	4	34	6
Iowa:								
Davenport.....	0	0	1	—	—	0	0	—
Des Moines.....	1	2	3	—	—	0	0	—
Sioux City.....	16	0	0	—	—	1	2	—
Waterloo.....	6	0	0	—	—	0	0	—
Missouri:								
Kansas City.....	8	3	7	—	1	12	14	4
St. Joseph.....	0	1	2	—	1	0	0	4
St. Louis.....	41	30	6	1	1	23	7	3
North Dakota:								
Fargo.....	12	0	0	—	0	18	0	0
Grand Forks.....	0	0	0	—	—	0	0	—
South Dakota:								
Aberdeen.....	1	1	1	—	—	3	0	—
Sioux Falls.....	0	0	0	—	—	0	0	—
Nebraska:								
Omaha.....	15	2	8	—	0	0	0	3
Kansas:								
Topeka.....	24	1	0	1	0	4	4	0
Wichita.....	4	0	1	—	0	49	1	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	0	1	0	—	0	0	0	0
Maryland:								
Baltimore.....	143	18	9	3	4	5	176	20
Cumberland.....	0	0	2	—	0	13	0	0
Frederick.....	0	0	0	1	0	1	0	0
District of Columbia:								
Washington.....	33	10	5	2	1	19	0	13
Virginia:								
Lynchburg.....	18	0	1	—	1	5	0	1
Norfolk.....	2	0	0	—	0	9	0	4
Richmond.....	0	2	1	—	1	0	0	0
Roanoke.....	16	0	0	—	0	0	0	0
West Virginia:								
Charleston.....	0	0	1	1	0	32	0	3
Huntington.....	0	—	1	—	0	2	0	0
Wheeling.....	0	0	0	—	0	18	0	1
North Carolina:								
Raleigh.....	4	0	0	—	0	5	0	3
Wilmington.....	0	0	0	—	0	0	0	0
Winston-Salem.....	5	0	1	—	0	26	4	3
South Carolina:								
Charleston.....	1	0	0	42	2	0	0	2
Columbia.....	2	0	0	—	0	36	0	0
Greenville.....	0	0	0	—	0	17	0	0
Georgia:								
Atlanta.....	7	2	1	10	0	9	0	5
Brunswick.....	2	0	0	—	0	0	0	0
Savannah.....	—	0	—	—	—	—	—	—
Florida:								
Miami.....	0	1	3	—	0	5	0	1
Tampa.....	3	0	2	—	0	0	0	0

## City reports for week ended May 7, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	0		1	0	0	1
Lexington.....	2		1		0	0	4	2
Tennessee:								
Memphis.....	8	2	2		1		0	0
Nashville.....	0	1	2		1	0	0	3
Alabama:								
Birmingham.....	2	1	1	1	4	0	4	8
Mobile.....	0	0	1		1	0	0	0
Montgomery.....	3	0	2	1		0	2	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	1			0	0	
Little Rock.....	1	0	0		1	0	0	5
Louisiana:								
New Orleans.....	0	10	8	1	1	0	0	6
Shreveport.....	0	0	1		0	5	10	5
Oklahoma:								
Muskogee.....	0		1			20	0	
Texas:								
Dallas.....	6	4	6		0		0	5
Fort Worth.....	11	2	2		1		0	1
Galveston.....	0	0	2		0	0	0	2
Houston.....	0	4	7		1	6	0	6
San Antonio.....	0	2	2		0	1	0	9
MOUNTAIN								
Montana:								
Billings.....		0						
Great Falls.....	5	0	0		1	3	0	0
Helena.....	1	0	0		0	1	0	0
Missoula.....	0	0	0		0	0	0	1
Idaho:								
Boise.....	2	0	0		0	0	2	0
Colorado:								
Denver.....	49	7	1		3	90	50	8
Pueblo.....	17	0	0		0	0	1	1
New Mexico:								
Albuquerque.....	4	0	2		0	28	6	0
Arizona:								
Phoenix.....	2		0		0	1	0	0
Utah:								
Salt Lake City.....	73	2	0		0	0	13	0
Nevada:								
Reno.....	0	0	0		0	0	0	0
PACIFIC								
Washington:								
Seattle.....	17	2	1			147	5	
Spokane.....	23	2	0			2	0	
Tacoma.....	1	0	1		0	57	9	3
Oregon:								
Portland.....	2	5	3	1	0	178	4	1
Salem.....	0	1	0		0	0	1	0
California:								
Los Angeles.....		27						
Sacramento.....	15	2	1		0	26	1	6
San Francisco.....	52	10	3	1	0	227	11	5

## City reports for week ended May 7, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	4	2	0	0	0	0	0	0	0	3	21
New Hampshire:											
Concord .....	1	5	0	0	0	1	0	0	0	0	8
Manchester .....	1	0	0	0	0	0	0	0	0	0	10
Nashua .....	0	0	0	0	0	0	0	0	0	0	0
Vermont:											
Barre .....	0	0	0	0	0	1	0	0	0	0	3
Burlington .....	0	1	0	0	0	0	0	0	0	0	8
Massachusetts:											
Boston .....	78	157	0	0	0	8	1	0	0	24	233
Fall River .....	5	8	0	0	0	0	0	0	0	1	27
Springfield .....	11	7	0	0	0	1	0	0	0	3	21
Worcester .....	10	37	0	0	0	3	0	0	0	7	
Rhode Island:											
Pawtucket .....	1	0	0	0	0	0	0	0	0	0	19
Providence .....	13	32	0	0	0	1	0	0	0	7	65
Connecticut:											
Bridgesport .....	8	8	0	0	0	1	0	0	0	1	29
Hartford .....	6	16	0	0	0	0	0	0	0	10	44
New Haven .....	4	11	0	0	0	0	0	0	0	10	27
MIDDLE ATLANTIC											
New York:											
Buffalo .....	25	91	1	0	0	10	0	1	0	0	140
New York .....	293	988	0	0	0	95	9	11	2	178	1,525
Rochester .....	11	68	0	0	0	3	0	1	0	3	87
Syracuse .....	12	38	0	0	0	2	0	0	0	56	56
New Jersey:											
Camden .....	5	43	0	0	0	3	0	0	0	5	35
Newark .....	30	41	0	0	0	8	0	0	0	42	96
Trenton .....	3	10	0	0	0	1	0	0	0	5	34
Pennsylvania:											
Philadelphia .....	104	240	0	0	0	36	2	0	1	140	511
Pittsburgh .....	31	55	0	0	0	6	0	1	0	17	188
Reading .....	5	21	0	0	0	2	0	0	0	11	28
Scranton .....		9		0				0		3	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati .....	24	41	2	0	0	9	1	0	0	6	118
Cleveland .....	44	91	0	0	0	9	1	0	0	131	196
Columbus .....	8		1								
Toledo .....	12	8	1	0	0	5	0	0	0	60	77
Indiana:											
Fort Wayne .....	5	2	0	0	0	2	0	0	0	3	29
Indianapolis .....	15	11	7	0	0	4	0	0	0	20	
South Bend .....	5	0	1	0	0	0	0	0	0	3	19
Terre Haute .....	4	1	1	0	0	0	0	0	0	4	16
Illinois:											
Chicago .....	131	188	2	0	0	39	2	1	0	114	716
Springfield .....	4	3	0	0	0	0	0	0	0	4	16
Michigan:											
Detroit .....	123	263	2	0	0	32	2	1	0	165	289
Flint .....	13	0	2	0	0	5	0	1	0	11	21
Grand Rapids .....	14	4	0	0	0	0	1	0	0	4	33
Wisconsin:											
Kenosha .....	2	5	0	0	0	0	0	0	0	1	7
Madison .....	3	2	0	0			0	0		28	
Milwaukee .....	29	28	0	0	0	8	0	1	0	109	115
Racine .....	4	0	0	0	0	0	0	0	0	0	15
Superior .....	2	0	0	0	0	0	0	0	0	0	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth .....	7	0	0	0	0	0	0	0	0	6	31
Minneapolis .....	30	38	0	3	0	1	0	0	0	14	104
St. Paul .....	22	16	1	0	0	1	0	1	0	22	71

## City reports for week ended May 7, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport.....	0	3	4	1	—	—	0	0	—	0	—
Des Moines.....	6	19	2	0	—	—	0	0	—	0	29
Sioux City.....	3	1	1	2	—	—	0	0	—	3	—
Waterloo.....	1	0	0	0	—	—	0	0	—	6	—
Missouri:											
Kansas City.....	18	18	0	0	0	7	0	0	0	20	72
St. Joseph.....	4	1	1	0	0	1	0	0	0	2	26
St. Louis.....	64	11	2	0	0	14	1	0	0	34	232
North Dakota:											
Fargo.....	2	3	0	0	0	0	0	0	0	0	5
Grand Forks.....	0	0	0	0	—	—	0	0	—	0	—
South Dakota:											
Aberdeen.....	0	0	0	0	—	—	0	0	—	0	—
Sioux Falls.....	2	0	1	0	—	—	0	0	—	0	10
Nebraska: Omaha.....	4	6	4	2	0	2	0	0	0	0	52
Kansas:											
Topeka.....	2	3	1	0	0	2	0	0	0	27	17
Wichita.....	2	0	1	0	0	1	0	0	0	2	34
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	5	7	0	0	0	2	0	0	0	6	26
Maryland:											
Baltimore.....	42	75	0	0	0	16	1	0	0	121	209
Cumberland.....	0	0	0	0	0	0	0	0	0	2	13
Frederick.....	0	2	0	0	0	0	0	0	0	0	1
District of Columbia:											
Washington.....	24	27	0	0	0	15	1	1	0	21	154
Virginia:											
Lynchburg.....	0	4	0	0	0	0	0	0	0	47	11
Norfolk.....	1	5	0	0	0	3	0	0	0	26	39
Richmond.....	4	4	0	0	0	5	0	0	0	0	53
Roanoke.....	0	4	0	0	0	0	0	0	0	2	15
West Virginia:											
Charleston.....	1	1	0	0	0	1	0	1	0	3	13
Huntington.....	—	1	—	0	—	—	—	0	—	0	—
Wheeling.....	1	0	0	0	0	0	1	1	0	4	9
North Carolina:											
Raleigh.....	0	0	0	0	0	2	0	0	0	2	19
Wilmington.....	0	0	0	0	0	0	0	0	0	13	5
Winston-Salem.....	0	8	0	0	0	1	0	0	0	29	11
South Carolina:											
Charleston.....	0	0	0	0	0	1	0	0	0	0	21
Columbia.....	0	0	0	0	0	0	0	0	0	1	17
Greenville.....	—	0	1	0	0	0	—	0	0	2	—
Georgia:											
Atlanta.....	8	2	2	0	0	5	0	2	0	7	66
Brunswick.....	0	0	0	0	0	0	0	0	0	0	3
Savannah.....	0	—	1	—	—	—	0	—	—	—	—
Florida:											
Miami.....	0	0	0	0	0	1	1	0	0	1	21
Tampa.....	1	1	0	0	0	1	1	0	0	0	25
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	0	0	0	0	0	0	0	0	0	16
Lexington.....	—	1	—	1	0	2	—	0	0	4	12
Tennessee:											
Memphis.....	9	7	1	0	0	6	1	0	0	42	78
Nashville.....	2	0	0	2	0	1	1	0	0	7	54
Alabama:											
Birmingham.....	1	0	1	0	0	3	0	0	0	7	66
Mobile.....	0	2	0	9	0	0	0	3	0	0	20
Montgomery.....	0	0	0	0	—	—	0	0	—	0	—

<sup>1</sup> Nonresident

## City reports for week ended May 7, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0		0	0		0		
Little Rock	1	1	0	0	0	2	1	0	0	4	9
Louisiana:											
New Orleans	12	8	0	0	0	8	2	2	1	3	122
Shreveport	0	0	1	0	0	2	0	0	0	7	
Oklahoma											
Muskogee		0		0				0		0	
Texas:											
Dallas	5	1	1	1	0	5	0	0	0	14	40
Fort Worth	2	3	3	15	0	1	0	0	0	0	31
Galveston	0	0	0	0	0	1	1	0	0	0	12
Houston	1	3	3	1	0	7	1	1	0	1	72
San Antonio	1	0	0	0	0	3	0	0	0	0	71
MOUNTAIN											
Montana:											
Billings	0		0				0				
Great Falls	1	0	0	0	0	0	0	0	0	0	6
Helena	0	0	0	0	0	0	0	0	0	0	2
Missoula	1	2	0	0	0	0	0	0	0	0	7
Idaho:											
Boise	0	1	1	16	0	0	0	0	0	0	5
Colorado:											
Denver	13	15	0	0	0	5	0	0	0	17	72
Pueblo	1	0	0	0	0	0	0	0	0	1	10
New Mexico:											
Albuquerque	0	2	0	0	0	4	0	0	0	0	11
Arizona:											
Phoenix	2	1	0	0	0	1	0	0	0	0	
Utah:											
Salt Lake City	1	0	0	0	0	2	0	0	0	7	32
Nevada:											
Reno	1	0	0	0	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle	8	10	3	3			1	0		1	
Spokane	4	0	7	0		0	0	0		18	0
Tacoma	3	1	3	0	0	0	0	0	0	0	20
Oregon:											
Portland	5	4	9	6	0	2	1	0	0	10	43
Salem	0	0	0	0				0		3	
California:											
Los Angeles	32		7				1				
Sacramento	2	1	1	0	0	3	1	0	0	1	29
San Francisco	21	9	0	2	0	17	1	0	0	12	143

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Poliomyelitis		Poliomyelitis (infantile paralysis)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Deaths
<b>NEW ENGLAND</b>								
New Hampshire:								
Manchester.....		0	1	0	0	0	0	0
Massachusetts:								
Boston.....	1	1	1	0	0	0	0	0
Springfield.....	1	0	0	0	0	0	0	0
Rhode Island:								
Providence.....	0	0	0	0	0	0	0	1



## City reports for week ended May 7, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
<b>New York</b>									
New York .....	6	2	0	0	0	0	1	1	0
Rochester .....	0	0	1	0	0	0	0	0	0
<b>Pennsylvania</b>									
Philadelphia .....	5	2	1	1	1	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
<b>Ohio</b>									
Cleveland .....	1	0	0	0	0	0	0	0	0
<b>Indiana</b>									
Indianapolis .....	2	0	0	0	0	0	0	0	0
<b>Illinois</b>									
Chicago .....	3	3	1	0	0	0	0	0	0
Springfield .....	0	1	0	0	0	0	0	0	0
<b>Michigan</b>									
Detroit .....	1	1	0	1	0	0	1	0	0
<b>WEST NORTH CENTRAL</b>									
<b>Missouri</b>									
Kansas City .....	0	0	0	0	1	0	0	0	0
<b>Kansas</b>									
Wichita .....	0	1	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
<b>District of Columbia</b>									
Washington .....	1	1	0	0	0	0	0	1	0
<b>Virginia</b>									
Norfolk .....	1	0	0	0	0	0	0	0	0
<b>North Carolina</b>									
Raleigh .....	0	1	0	0	0	0	0	0	0
Winston-Salem .....	0	0	1	0	0	0	0	0	0
<b>South Carolina</b>									
Charleston <sup>1</sup> .....	0	0	0	0	6	0	0	0	0
Columbia .....	0	0	0	0	0	1	0	0	0
<b>Georgia</b>									
Atlanta .....	0	0	0	0	2	0	0	0	0
<b>Florida</b>									
Tampa .....	0	0	0	0	1	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
<b>Tennessee</b>									
Memphis <sup>2</sup> .....	0	0	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
<b>Arkansas</b>									
Little Rock .....	0	1	0	0	0	0	0	1	0
<b>Louisiana</b>									
New Orleans .....	0	0	0	0	0	0	0	2	0
<b>Texas</b>									
Dallas .....	0	0	0	0	2	2	0	0	0
<b>PACIFIC</b>									
<b>Oregon</b>									
Portland .....	1	0	0	0	0	0	0	0	0
<b>California</b>									
San Francisco .....	3	2	0	0	0	0	0	0	0

<sup>1</sup> Dengue, 4 cases at Charleston, S. C.<sup>2</sup> Rabies in man, 1 death in Memphis, Tenn.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 7, 1932, compared with those for a like period ended May 9, 1931. The population figures used in computing the rates are estimated

mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, April 3 to May 7, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931
98 cities .....	51	65	54	66	51	53	<sup>2</sup> 43	63	<sup>3</sup> 44	<sup>4</sup> 67
New England .....	62	84	29	79	36	58	<sup>5</sup> 21	36	34	38
Middle Atlantic .....	53	59	49	62	55	46	52	61	49	61
East North Central .....	46	86	44	83	41	58	33	84	<sup>6</sup> 34	82
West North Central .....	27	63	49	63	57	67	<sup>7</sup> 56	57	53	71
South Atlantic .....	37	49	49	65	39	51	43	69	<sup>8</sup> 47	63
East South Central .....	40	18	17	23	17	23	<sup>9</sup> 19	6	46	41
West South Central .....	92	54	119	74	102	71	79	68	89	108
Mountain .....	52	35	60	17	86	26	<sup>10</sup> 35	26	<sup>11</sup> 9	<sup>12</sup> 27
Pacific .....	70	57	110	43	59	63	<sup>11</sup> 15	53	<sup>12</sup> 23	61

## MEASLES CASE RATES

98 cities .....	860	1,327	982	1,316	1,107	1,342	<sup>1</sup> 1,200	1,250	<sup>2</sup> 1,286	<sup>3</sup> 1,305
New England .....	697	1,503	765	1,349	851	1,286	<sup>4</sup> 1,318	964	1,002	1,063
Middle Atlantic .....	560	1,422	554	1,544	579	1,419	156	1,411	478	1,434
East North Central .....	1,648	830	2,160	789	2,680	1,073	2,821	896	<sup>5</sup> 3,406	1,101
West North Central .....	388	704	724	589	491	830	<sup>6</sup> 421	777	243	1,016
South Atlantic .....	343	4,554	298	4,350	339	4,055	663	3,477	<sup>7</sup> 444	3,559
East South Central .....	23	1,794	0	1,627	12	1,615	<sup>8</sup> 6	1,439	0	1,275
West South Central .....	49	68	30	102	26	139	43	156	40	152
Mountain .....	1,008	844	1,336	922	1,043	661	<sup>9</sup> 106	661	<sup>10</sup> 833	<sup>11</sup> 555
Pacific .....	1,312	500	952	417	916	517	<sup>11</sup> 1,713	506	<sup>12</sup> 1,759	502

## SCARLET FEVER CASE RATES

98 cities .....	423	362	477	382	455	406	<sup>1</sup> 513	372	<sup>2</sup> 458	<sup>3</sup> 390
New England .....	774	474	790	584	678	575	<sup>4</sup> 971	582	678	630
Middle Atlantic .....	625	413	744	415	721	488	750	409	706	448
East North Central .....	369	337	399	382	369	431	436	402	<sup>5</sup> 405	438
West North Central .....	226	538	267	518	252	469	<sup>6</sup> 226	480	182	440
South Atlantic .....	318	356	310	307	314	305	339	273	<sup>7</sup> 273	277
East South Central .....	87	470	40	587	87	399	<sup>8</sup> 50	411	52	253
West South Central .....	53	105	56	112	46	98	43	132	43	105
Mountain .....	250	174	207	278	190	191	<sup>9</sup> 89	191	<sup>10</sup> 160	<sup>11</sup> 170
Pacific .....	145	104	148	116	171	86	<sup>12</sup> 77	94	<sup>13</sup> 80	106

## SMALLPOX CASE RATES

98 cities .....	6	19	7	22	8	21	<sup>1</sup> 5	23	<sup>2</sup> 7	<sup>3</sup> 15
New England .....	0	0	0	0	0	0	<sup>4</sup> 0	0	0	0
Middle Atlantic .....	0	1	0	2	0	1	0	1	0	2
East North Central .....	4	6	6	19	2	20	3	10	<sup>5</sup> 0	6
West North Central .....	9	96	13	92	15	71	<sup>6</sup> 9	115	13	78
South Atlantic .....	8	18	0	10	0	6	0	6	<sup>7</sup> 0	8
East South Central .....	52	0	46	53	110	35	<sup>8</sup> 62	59	64	41
West South Central .....	10	81	7	95	3	98	0	102	7	64
Mountain .....	9	17	9	86	17	17	<sup>9</sup> 0	0	<sup>10</sup> 142	<sup>11</sup> 9
Pacific .....	23	53	27	27	23	41	<sup>12</sup> 21	51	<sup>13</sup> 19	12

See footnotes at end of table.

Summary of weekly reports from cities, April 3 to May 7, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Apr. 9, 1932	Apr. 11, 1931	Apr. 16, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931
98 cities.....	3	5	5	5	5	3	27	6	15	45
New England.....	2	2	0	2	0	2	12	7	0	5
Middle Atlantic.....	1	5	2	4	5	4	5	7	6	5
East North Central.....	2	3	4	2	1	2	3	4	2	2
West North Central.....	0	0	2	4	2	4	5	4	0	2
South Atlantic.....	16	16	12	8	12	2	18	14	10	8
East South Central.....	23	6	35	12	6	6	12	12	17	6
West South Central.....	0	3	10	7	23	0	26	0	10	7
Mountain.....	0	0	9	9	9	9	10	0	0	0
Pacific.....	6	8	6	10	6	4	11	6	10	8

## INFLUENZA DEATH RATES

91 cities.....	25	18	20	17	18	13	14	11	9	12
New England.....	5	19	7	7	12	7	9	7	2	5
Middle Atlantic.....	23	12	23	12	18	12	8	12	8	11
East North Central.....	22	14	20	10	13	6	13	5	5	11
West North Central.....	23	15	20	29	20	18	16	12	12	6
South Atlantic.....	61	30	29	32	29	10	27	20	18	22
East South Central.....	75	70	34	76	34	15	14	19	50	51
West South Central.....	40	45	29	45	30	55	40	38	10	14
Mountain.....	34	17	9	17	9	17	54	26	35	27
Pacific.....	6	19	5	10	9	5	6	2	0	7

## PNEUMONIA DEATH RATES

91 cities.....	151	155	124	161	107	138	107	122	109	117
New England.....	192	173	129	144	146	132	187	154	129	130
Middle Atlantic.....	186	168	162	180	128	165	110	141	120	144
East North Central.....	79	118	71	127	72	98	78	76	88	87
West North Central.....	180	253	143	245	143	230	130	140	70	121
South Atlantic.....	204	200	167	188	118	168	141	140	128	131
East South Central.....	201	178	191	223	113	127	150	121	75	121
West South Central.....	205	169	91	173	101	145	87	152	128	114
Mountain.....	129	191	86	113	112	104	71	61	89	98
Pacific.....	72	60	56	67	51	46	54	46	84	70

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Newark, N. J., Kansas City, Mo., Fargo, N. Dak., Topeka, Kans., Covington, Ky., Billings, Mont., Denver, Colo., and Los Angeles, Calif., not included.

<sup>3</sup> Columbus, Ohio, Savannah, Ga., Billings, Mont., and Los Angeles, Calif., not included.

<sup>4</sup> Billings, Mont., not included.

<sup>5</sup> Newark, N. J., not included.

<sup>6</sup> Columbus, Ohio, not included.

<sup>7</sup> Kansas City, Mo., Fargo, N. Dak., and Topeka, Kans., not included.

<sup>8</sup> Savannah, Ga., not included.

<sup>9</sup> Covington, Ky., not included.

<sup>10</sup> Billings, Mont., and Denver, Colo., not included.

<sup>11</sup> Los Angeles, Calif., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended April 30, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended April 30, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Polio-myelitis	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup>						
Nova Scotia		6				
New Brunswick <sup>1</sup>						
Quebec		53		1		16
Ontario	3	29	1	1		5
Manitoba	1					
Saskatchewan					2	1
Alberta <sup>1</sup>						
British Columbia <sup>1</sup>						
Total	4	88	1	2	2	22

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended April 30, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended April 30, 1932, as follows:

Diseases	Cases	Disease	Cases
Chicken pox	47	Poliomyelitis	1
Diphtheria	27	Scarlet fever	129
Erysipelas	15	Tuberculosis	97
German measles	13	Typhoid fever	16
Influenza	53	Whooping cough	43
Measles	168		

### JAMAICA

*Communicable diseases—Four weeks ended April 23, 1932.*—During the four weeks ended April 23, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica, outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis		1	Leprosy	1	2
Chicken pox	19	85	Lethargic encephalitis		1
Diphtheria	2	1	Puerperal fever	1	4
Dysentery	5	1	Tuberculosis	42	68
Erysipelas		2	Typhoid fever	15	44

## MEXICO

*Tampico—Communicable diseases—April, 1932.*—During the month of April, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	4	3	Paratyphoid fever.....	2	2
Enteritis, various.....	47	41	Tuberculosis.....	23	19
Influenza.....	170	5	Typhoid fever.....	4	-----
Malaria.....	160	9	Whooping cough.....	24	-----
Measles.....	3	-----			

## PERU

*Lima—Influenza.*—According to a report dated May 6, 1932, there was a widespread epidemic of influenza in Lima, Peru, and in surrounding villages. It was reported that on May 3 the public schools of Lima and suburbs were closed for a period of 10 days to avoid spread of contagion. The disease was said to be of a mild form.

## PUERTO RICO

*San Juan—Notifiable diseases—Four weeks ended April 23, 1932.*—During the four weeks ended April 23, 1932, cases of certain notifiable diseases were reported in San Juan, Puerto Rico, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	12	Pellagra.....	1
Diphtheria.....	8	Typhoid fever.....	2
Malaria.....	40	Vincent's angina.....	1
Measles.....	32	Whooping cough.....	4
Ophthalmia neonatorum.....	2		

## VIRGIN ISLANDS

*Notifiable diseases—April, 1932.*—During the month of April, 1932, cases of certain diseases were reported in the Virgin Islands as follows:

Disease	Cases	Disease	Cases
Chancroid.....	3	Tuberculosis.....	2
Diphtheria.....	1	Uncinariasis.....	1
Gonorrhea.....	3	Whooping cough.....	10
Syphilis.....	14		





On vessel:

S. S. Angora at Rangoon from Calcutta..... C  
S. S. Narbada at Rangoon from Calcutta..... D

Place	Octo-ber, 1931	No. ven-er-ber, 1931	De-cem-ber, 1931	January, 1932			February, 1932			March, 1932			April, 1932		
				1-10	11-20	21-31	1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-31
				Indo-China (French) (see also table above):											
Annam							4								
Cambodia	19	4	3	1	9	2	4	2							
Cochin-China	18	2	2	2	2	2	3	2			6	1	3	4	1
Laos	14	6	14	2	1	2	2	2	P	3	3	2	4	3	6
	13	4	7	1	1	2	5			2	2	1	2	2	8

## PLAGUE

Place	Oct 18-19, 1931	Nov 12-13, 1931	Dec 15-16, 1931	Jan 1-2, 1932	Feb 5-6, 1932	Weeks ended—									
						February, 1932			March, 1932			April 1-32			May, 1932
						13	20	27	5	12	19	26	2	9	16
															30
Argentina, Cordoba Province.....															
Azores.....															
San Miguel Island.....		5												2	
Terceira Island.....		1													
		16													
Belgian Congo.....		6													

<sup>1</sup> Figures for cholera in the Philippine Islands are subject to correction.

<sup>2</sup> Reports incomplete.

<sup>3</sup> Including plague in the United States and its possessions.

<sup>4</sup> 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases, D, deaths, P, present]

Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932	Place	Sep-tem-ber, 1931	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932
British East Africa (see also table above): Kenya.....	C	14	64	44	41	17	33	22	Peru—Continued						
Ecuador: Province—									Department—Continued.						
Chimborazo.....	C	13	2	8		8	13		Lambayeque.....	C	1				
Loja.....	C	4	11	2		17	P		Libertad.....	C			1		
Indo-China.....	C		3		9	17	P		Lima.....	C	2	9	6		1
Madagascar (see also table above):	D		1		5	9			Plague-infected rats	D	1	4			
Province—									Lima.....	C	1	1		1	1
Ambatolampy.....	C					23	40		Pura.....	D	1	1	1	1	
Ambositra.....	C	1	8	36	142	24	28			D	8				
Antsirabe.....	C	19	5	37	121	166	60		Senegal	C	7				
Maevatanana.....	C	19	17	27	56	53	51		Baol.....	C	6	2			
	C	19	17	27	51	51	45		Dakar.....	C	13	8			
	C			4	51	51	45			C	45	4			10
Miarinarivo.....	D	14	18	10	14	15	13		Dourbel.....	D	31	4			5
Moramanga.....	D	12	16	9	14	15	12			C	13				
	D	12	13	25	30	13	9		Louga.....	C	5				
Tananarive.....	D	11	11	25	29	13	9		Rufisque.....	C	1	19			
	D	65	120	156	215	203	118			C	2	10			
	D	63	117	178	241	158	140		Thies.....	C	7	12			
Peru.....	D	2	8	27	21	11	2			C	1	2			
	D	2	7	11	9	8	2		Yombel.....	C	16	1			
Department—										D	5				9
Canete.....	C					3				D					5
Callamarca.....	D			14	5										

1 Reports incomplete.

















# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place	Week ended—																
	February, 1932			March, 1932					April, 1932								
	13	20	27	5	12	19	26	2	9	16	23	30					

<sup>1</sup> During the 3 weeks ended Apr. 30, 1932, a number of cases of suspected yellow fever were reported in the Interior

X

UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES  
PUBLIC HEALTH SERVICE

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JUNE 3 - - - - 1932

## SPECIAL ARTICLES

Action of Colloidal Paris Green on Larvæ of *C. apicalis*  
The Life Expectancy in Ireland and in Other Countries



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# UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

## DIVISION OF SANITARY REPORTS AND STATISTICS

Asst Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

JUNE 3, 1932

NO. 23

## THE ACTION OF COLLOIDAL PARIS GREEN ON THE LARVÆ OF *CULEX APICALIS*<sup>1</sup>

### A Preliminary Report

By H. G. GRANT, M. D., C. M., M. R. C. S., *Director of Malaria Control, Virginia State Department of Health*; BARCLAY M. NEWMAN, *Head of Science Department, Brooklyn Academy, New York*; and PIERCE D. WOOD

The observations and experiments upon the toxicity of four different colloidal preparations of Paris green to culicine larvæ reported upon in this paper were made during the summer and fall of 1931 by Pierce D. Wood, under the auspices of the Virginia State Department of Health, Division of Malaria Control, Dr. H. G. Grant, director. The solutions of colloidal Paris green herein referred to as Nos. 3, 18, and 19 were prepared by Barclay M. Newman, with the assistance of Dr. Arthur W. Thomas, professor of chemistry, Columbia University. Preparation No. 125 was made in the laboratory of Brooklyn Academy, New York, by Barclay M. Newman.

Paris green dust, mixed with various diluents, has been used since 1921 as a larvicide against anophelines, following Dr. M. A. Barber's (1) pioneer work, and has proved an extremely effective agent for this purpose. In fact, so excellently has it worked in killing anopheline larvæ that numerous attempts have been made to extend its use to the killing of culcines. Griffiths (2) proved that it was toxic to the latter if it could be made to reach them. It was hoped that colloidal Paris green might give promising results, since there was little doubt that the poison in this form, homogeneously distributed through the water, would reach them. This hope was based upon the knowledge of the manner in which larvæ feed, as demonstrated by Matheson (3), who gives good evidence that they make no selection of their food, sweeping it, admixed with both débris and some of the medium in which they live, into their alimentary tracts. That colloidal Paris green is an efficient larvicide for subsurface-feeding forms, at least in the case of *Culex apicalis* under laboratory conditions, is shown in this preliminary report.

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<sup>1</sup> These experiments were made possible through the efforts of Col. C. R. Kelley, of the Virginia State Department of Health, who fostered the idea behind them and placed it upon a practical basis.



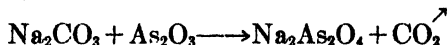
## 1. PREPARATION OF COLLOIDAL PARIS GREEN

Since there is nothing in the literature concerning colloidal Paris green, so far as could be ascertained by an examination of "Chemical Abstracts" and other sources, it was necessary to devise methods of preparation.

## PREPARATION OF SOLUTION NO. 3

With the assistance of Dr. Arthur W. Thomas a first preparation of colloidal Paris green was made, using a modification of Galloway's process for commercial Paris green dust. Copper aceto-arsenite (Paris green) was precipitated in the presence of gum arabic to form a protective colloid, as follows:

A. To 16 gm of anhydrous  $\text{Na}_2\text{CO}_3$  dissolved in 650 c c of water and brought to incipient ebullition, 10 gm of  $\text{As}_2\text{O}_3$  are added in small portions. The resulting solution is boiled for two hours. Sodium arsenite is formed:



B. To 8.5 gm  $\text{CuCl}_2$  dissolved in 350 c c of water, a solution of 5 gm of gum arabic dissolved in 300 c c of water are added. This  $\text{CuCl}_2$ -gum arabic solution is acidified with the addition of 5 c c of glacial acetic acid.

C. The cooled sodium arsenite solution is added, drop by drop, with violent agitation by means of a mechanical mixer, to the acidified  $\text{CuCl}_2$ -gum arabic solution. Paris green is precipitated in fine particles.

A fairly good colloidal Paris green solution is obtained, but the method leaves much to be desired. The greater part of the Paris green obtained quickly settles to the bottom. The final concentration contains but 0.5 gm, approximately, of Paris green per 100 c c of solution. By "final concentration" is meant the more or less stable colloid left after the comparatively rapid precipitation, extending over several hours, has ceased. Following the cessation of the rapid settlement, very slow settling proceeds, but at so exceedingly slow a rate as to cause only a scarcely appreciable change in the preparation after two months. The product is a protective colloid, and thus not only expensive as far as larvicides are concerned, but also subject to precipitation by dissolved salts. Another disadvantage of this preparation is that, unlike the better commercial brands of Paris green dust, the Paris green which it contains is not of known definite chemical constitution, or of tested general toxicity, and its alterations upon long standing as well as the variability of the product obtained by this method are unknown. Further, the method is not efficient, as much waste results. All in all, however, solution No. 3 should be regarded as a reasonable start toward a more nearly perfect product.

## PREPARATION OF SOLUTION NO. 18

One hundred gm of a commercial brand of Paris green dust, mixed with approximately 300 c c of a water-gelatin solution (300 c c of water + 25 gm gelatin) were run four times through a small colloid mill. The product is at best unsatisfactory, since after a few hours over 90 per cent of the Paris green has settled out. After a few days the gelatin brings about gelation; and in order to be sure of a solution of a fairly stable nature, the gel has to be dissolved in approximately twenty times its volume of water, and more settling of the larger particles still in suspension, because of the gelatin, allowed to take place. In usable form the No. 18 preparation has but 0.25 gm, approximately, of Paris green per 100 c c of solution.

## PREPARATION OF SOLUTION NO. 19

Solution No. 19 was prepared precisely as No. 18, excepting that 25 gm of soap flakes (Ivory) were used instead of 25 gm of gelatin to protect the colloid. In order to render the product fit for use, dilution has to be made in this case also, as in the instance of No. 18. The colloid, in usable form, has but 0.25 gm, approximately, of Paris green per 100 c c of solution.

Aside from the high cost and short life of colloid mills when used to grind such an abrasive substance as Paris green dust, the unsatisfactory product, the inconvenience of the method, and the cost, probably obviate the use of this method.

## PREPARATION OF SOLUTION NO. 125

The methods of colloid preparation applicable to Paris green are (a) precipitation by synthesis, (b) mechanical dispersion, (c) peptization, (d) replacement of solvent. Methods (a) and (b) gave only partially successful results. Methods (c) and (d) were next attempted.

In this connection it was noted that peptization is sometimes brought about by the agency of ammonium hydroxide. Paris green is soluble in ammonium hydroxide. Upon experimentation it was found that Paris green dissolved in concentrated  $\text{NH}_4\text{OH}$  yielded a colloidal solution when stirred into a large volume of water. (With much Paris green- $\text{NH}_4\text{OH}$  solution and little water, complete settlement takes place immediately.) This can be called either peptization or replacement of solvent, according to the chemical viewpoint adopted.

Solution No. 125, then, consists of commercial Paris green dissolved in concentrated  $\text{NH}_4\text{OH}$  to form a rather clear, dark blue solution, containing 20 gm of Paris green to each 100 c c of solution. The maximum solubility of the brand used was about 50 gm to each 100 c c of concentrated  $\text{NH}_4\text{OH}$ .

This method is a simple means of having at hand a source of colloidal Paris green apparently constant in strength and invariable in chemical nature. Five drops of the saturated solution stirred into a liter of water yields a colloidal Paris green preparation with a quite noticeable green color. (The strength of such a suspension is about 0.125 gm of Paris green to a liter of water.) The Paris green settles out rather slowly; it takes more than a week for the greater part of the Paris green to settle out of such a concentration of the colloid. With more dilute solutions of the colloid, the settling is much slower.

Dissolved salts such as would be met with in nature do not seem to affect the rate of settling appreciably.

Gum, gelatin, sugars, soaps, albumin, and various ions (except the  $\text{NH}_4$  ion) either cause more rapid settlement or do not affect the rate of precipitation to the bottom. Acids and chlorine water will redissolve the precipitate and yield preparations rather stable in nature. Neutralization will then cause reprecipitation of the Paris green.

Laboratory results with No. 125 as a larvicide for the subsurface feeding larvæ of *Culex apicalis* are promising.

## II. THE TOXICITY OF COLLOIDAL PARIS GREEN TO CULEX APICALIS

The experiments made to determine the toxicity of the colloidal preparations Nos. 3, 18, 19, and 125 were carried out during a period extending from July 28 to October 24, 1931, at Richmond, Va.

Larvæ of *Culex apicalis* were chosen as the subject of these experiments, and were obtained from, first, a pond, and later a spring, both near Richmond.

### METHOD

The larvæ were in each case placed in half-gallon glass jars containing very nearly 2,000 c c of water in the case of the controls, and of water + colloid in the case of the Paris green tests. Each jar was covered by resting the larger end of a glass lantern chimney over the neck of the jar, the smaller end being covered with several thicknesses of cotton gauze held in place by rubber bands.

Pond or spring water from the breeding places of the larvæ was used in preparing the controls as well as the dilutions of the colloids. The larvæ were transferred from the partially full half-gallon jars, in which they were transported to the laboratory, to the controls and the suspensions by means of a medicine dropper. Therefore a small quantity of water was added with the larvæ, introducing a slight error of dilution.

In the case of solution No. 3, in the beginning the suspensions in their different strengths were made up by first mixing equal quantities of the colloid and water, and then from this mixture a one-to-one

solution, preparing the further dilutions by adding the requisite amounts of water. When the quantities of water necessary to this plan became too great for simple manipulation, the method was altered; in each instance definite amounts of No. 3 were added to the 2 liters of water in the containers. Thus, the preparations made from No. 3 were all volume-volume dilutions.

In the case of Nos. 18, 19, and 125, the dilutions were made on a weight-weight basis. The proper quantity of the original colloid preparation, so calculated as to contain the required weight of Paris green, was added to the 2 liters of water.

In some cases the dilutions were not made fresh for each experiment. The finding that larvæ were killed under such conditions, after the diluted colloid had been left standing for some time, and slowly settling, is a favorable one. Exact determinations along this line have not been made, as such a series of experiments is perhaps best carried out under field conditions.

Time observations were made upon the length of time elapsed from the time when the larvæ were first placed in the suspensions until the time when all the larvæ were dead. This is referred to as the killing time. Evidences of death were taken to be (1) larvæ motionless upon the bottom, (2) larvæ showing no reaction to stimulation.

#### RESULTS OF TOXICITY DETERMINATIONS

The experiments which were most interesting were, first, those carried out with solution No. 3 in dilutions of 1 to 1,000,000, 1 to 2,500,000; second, those carried out with solution No. 18 in dilutions of 1 to 500,000, 1 to 1,000,000, 1 to 2,500,000, and 1 to 5,000,000; third, those carried out with No. 19 in dilutions of 1 to 500,000, 1 to 1,000,000, 1 to 2,500,000, and 1 to 5,000,000; and lastly, those made with solution No. 125 in dilutions of 1 to 5,000,000.

In the experiments carried out with solution No. 3 in dilutions of 1 to 1,000,000—that is, experiments Nos. 23, 29, 36, 43, 51, 59, and 67—the killing time varied from a minimum of 23 hours in experiment No. 29 to 3 days in experiment No. 43. Also, in the experiments carried out with solution No. 3 in dilutions of 1 to 2,500,000—that is, experiments Nos. 44, 52, 60, 68, and 74—the killing time varied from one day in experiment No. 74 to 5 days in experiment No. 44. In the experiments carried out with solution No. 3 in dilutions of 1 to 5,000,000 there was a greater difference in the time which elapsed until all the larvæ had died. The longest time was in experiment No. 70, in which 14 days elapsed before all the larvæ were killed; whereas in experiment No. 73, with the same dilution, all the larvæ were dead within one day.

The difference in killing time in solutions Nos. 18, 19, and 125 are not so great as in solution No. 3. With solution No. 18 in dilution of

1 to 500,000 the shortest time in which all the larvæ died was 17 hours in experiment No. 89, whereas the longest time with this same strength of solution was in experiment No. 103. With solution No. 18 in dilutions of 1 to 500,000, the killing time varied from 2 days in experiment No. 101 to over 6 days in experiment No. 106.

Using solution No. 19 in dilutions of 1 to 2,500,000 the shortest killing time was 17 hours in experiment No. 114 and the longest time 2 days and 4 hours in experiment No. 132. Using solution No. 19 in dilutions of 1 to 5,000,000 the shortest killing time was 1 day and 3 hours in experiment No. 123, and the longest 6 days and 7 hours in experiment No. 134.

Solution No. 125 worked much better as a larvicide than any other of the preparations. There were eight experiments carried out with the same dilution—that is, 1 to 5,000,000. The killing time varied from 19 hours in experiment No. 148 to 3 days in experiment No. 141.

The difference in killing time may have been due to some or all of the following factors: (1) The varying stages of development of the larvæ; (2) the previous experiences of the larvæ with respect to food, light, temperature, water conditions, parasites, etc.; (3) the natural differences between various batches of larvæ; (4) varying amounts of food present in the medium in which they were placed; (5) the use of the same solution more than once.

Attention should be called to the fact that in all of the controls not as many pupæ developed as one would expect. This was probably due to lack of proper food for the larvæ and insufficient sunlight.

#### SUMMARY

1. Colloidal Paris green is toxic, under laboratory conditions, to the larvæ of *Culex apicalis*, in as small concentrations as 1 part by weight of Paris green to 5,000,000 parts by weight of water.

2. Colloidal preparations made from a solution of Paris green in concentrated  $\text{NH}_4\text{OH}$  gave the best results of any of the preparations used, killing all larvæ placed in 1 to 5,000,000 dilutions within periods ranging from 19 hours to 3 days.

3. It is possible that colloidal Paris green can be developed as an effective and comparatively inexpensive mosquito larvicide.

(Further experiments to determine the action of colloidal Paris green as a larvicide are in progress. Field work will be done in which the action of the colloid on the top-feeding minnows and small fish will be noted.)

#### REFERENCES

(1) Barber, M. A.: Arsenic as a larvicide for anopheline larvæ. Pub. Health Rep., vol. 36, no. 49 (Dec. 9, 1921), pp. 3027-3034.

(2) Griffiths, T. H. D.: Moist sand method of applying Paris green for destruction of subsurface-feeding larvæ. Pub. Health Rep., vol. 42, no. 44 (Nov. 4, 1927), pp. 2701-2705.

(3) Matheson, Robert: Aquatic plants as factors in mosquito control and the problem of the food of mosquito larvæ. Proc. of the 17th Ann. Meeting of the New Jersey Mosquito Extermination Association, 1930.

(Tables with experimental data follow.)

DATA ON EXPERIMENT USING SOLUTION NO. 3

Date	Number of experiment	Number of adults hatched	Number of pupæ	Solution No and dilution	Time till death	Remarks
July 28	1	0	1	No. 3, conc. ....	25 minutes to 1 hour and 6 minutes.	
29	2	0		No. 3 (1-1 dilution).	35 minutes.	
29	3	0	0	No. 3 (1-4)	33 minutes.	
29	4	0	0	No. 3 (1-8)	42 minutes.	
30	5	0	0	No. 3 (1-16)	1 hour.	
30	6	0	0	No. 3 (1-32)	1 hour and 30 minutes.	
31	7	0	0	No. 3 (1-64)	2 hours and 2 minutes.	
Aug. 3	8	3	0	No. 3 (1-128)	2 hours and 32 minutes.	
3	9	0	0	No. 3 (1-256)	4 hours and 5 minutes.	
3	10	0	0	No. 3 (1-512)	4 hours and 30 minutes.	
4	11	0	0	No. 3 (1-1,024)	5 hours and 5 minutes.	
5	12	0	0	No. 3 (1-2,048)	5 hours and 30 minutes.	
5	13	0	0	No. 3 (1-4,136)	6 hours and 24 minutes.	
5	14	0	3	No. 3 (1-8,272)	10 hours.	Pupæ died in 36 hours.
5	15	1	3	No. 3 (1-82,720)	24 hours.	3 pupæ died in about 3 days. Adult died several hours after hatching out.
5	16	0	2	No. 3 (1-165,440)	9 days.	Pupæ died in 11 days; 1 larvæ died in 27 days.
7	17			No. 3 (1-1,654,400)	32 days (?)	
10	18	0	0	No. 3 (1-1,000,000)	13 days and 2 hours.	
27	19	0	0	No. 3 (1-50,000)	10 hours.	
27	20	0	1	No. 3 (1-100,000)	20 hours and 37 minutes.	Pupa died in short time.
27	21	1	0	No. 3 (1-250,000)	1 day and 7 hours.	Hatched out but died in few minutes.
27	22	1	0	No. 3 (1-500,000)	2 days and 8 hours.	Hatched Aug. 28 and died in several hours.
27	23	1	0	No. 3 (1-1,000,000)	2 days and 18 hours.	Hatched out but died Aug. 31.
Sept. 8	24	0	0	No. 3 (1-5,000,000)	3 days and 21 hours.	
8	25	0	0	No. 3 (1-50,000)	23 hours.	
8	26	0	0	No. 3 (1-100,000)	do.	
8	27	0	0	No. 3 (1-250,000)	do.	
8	28	0	0	No. 3 (1-500,000)	do.	
8	29	0	0	No. 3 (1-1,000,000)	do.	
8	30	0	0	No. 3 (1-5,000,000)	48 hours.	
8	31	0	0	Control for 25, 26, 27, 28, 29, 30.		All alive at end of experiment.
9	32	0	0	No. 3 (1-50,000)	24 hours.	
9	33	0	0	No. 3 (1-100,000)	do.	
9	34	0	0	No. 3 (1-250,000)	23 hours and 56 minutes.	
9	35	0	0	No. 3 (1-500,000)	23 hours and 54 minutes.	
9	36	0	0	No. 3 (1-1,000,000)	25 hours and 5 minutes.	
9	37	0	0	No. 3 (1-5,000,000)	44 hours and 15 minutes.	
9	38	0	0	Control for 32, 33, 34, 35, 36, 37.		Do.
11	39	0	0	No. 3 (1-50,000)	22 hours.	
11	40	0	0	No. 3 (1-100,000)	do.	
11	41	0	0	No. 3 (1-250,000)	do.	
11	42	0	0	No. 3 (1-500,000)	22 hours and 30 minutes.	
11	43	0	0	No. 3 (1-1,000,000)	3 days.	
11	44	0	0	No. 3 (1-2,500,000)	5 days and 22 hours.	
11	45	0	0	No. 3 (1-5,000,000)	do.	
11	46	0	0	Control for 39, 40, 41, 42, 43, 44, 45.		8 dead in 5 days and 22 hours.
23	47	0	0	No. 3 (1-50,000)	33 hours.	
23	48	0	0	No. 3 (1-100,000)	do.	
23	49	0	0	No. 3 (1-250,000)	32 hours and 58 minutes.	
23	50	0	0	No. 3 (1-500,000)	32 hours and 57 minutes.	
23	51	0	0	No. 3 (1-1,000,000)	35 hours.	
23	52	0	0	No. 3 (1-2,500,000)	32 hours and 54 minutes.	

1 Control.

## DATA ON EXPERIMENT USING SOLUTION NO. 3—Continued

Date	Number of experiment	Number of adults hatched	Number of pupae	Solution No. and dilution	Time till death	Remarks
Sept. 23	53	0	0	No. 3 (1-5,000,000)	40 hours.....	All living (no pupa).
23	54	0	0	Control for 47, 48, 49, 50, 51, 52, 53.		
27	55	0	0	No. 3 (1-50,000).....	27 hours and 45 minutes	
27	56	0	0	No. 3 (1-100,000).....	do.....	
27	57	0	0	No. 3 (1-250,000).....	27 hours and 50 minutes	
27	58	0	0	No. 3 (1-500,000).....	do.....	
27	59	0	0	No. 3 (1-1,000,000).....	do.....	
27	60	0	0	No. 3 (1-2,500,000).....	do.....	
27	61	0	0	No. 3 (1-5,000,000).....	3 days.....	
27	62	0	0	Control for 55, 56, 57, 58, 59, 60, 61, 62.		14 larvæ and 2 pupæ living, 6 dead.
30	63	0	0	No. 3 (1-50,000).....	32 hours and 5 minutes	
30	64	0	0	No. 3 (1-100,000).....	32 hours and 14 minutes	
30	65	0	0	No. 3 (1-250,000).....	32 hours and 17 minutes	
30	66	0	0	No. 3 (1-500,000).....	32 hours and 14 minutes	
30	67	0	0	No. 3 (1-1,000,000).....	32 hours and 13 minutes	
30	68	0	0	No. 3 (1-2,500,000).....	32 hours and 8 minutes	
30	69	0	0	No. 3 (1-5,000,000).....	9 days, 4 hours, and 41 minutes.	
30	70	0	0	No. 3 (1-5,000,000).....	14 days.....	
30	71	0	0	No. 3 (1-5,000,000).....	13 days.....	
30	72	0	0	Control for 63, 64, 65, 66, 67, 68, 69, 70, 71.		All alive Oct. 2; all hatched out Oct. 5. Used 50 larvæ. Do. 35 living, 8 dead (3 adults); used 50 larvæ. Used 50 larvæ. 35 alive Used 50 larvæ. Used 25 larvæ. 2 dead. Used 25 larvæ.
Oct. 7	73	0	0	No. 3 (1-2,500,000).....	32 hours.....	
7	74	0	0	No. 3 (1-5,000,000).....	34 hours.....	
7	75	0	0	Control for 73 and 74.		
14	76	0	0	No. 3 (1-5,000,000).....	3 days.....	
14	77	15	0	Control for 76.		
21	78	0	0	No. 3 (1-5,000,000).....	2 days.....	
21	79	0	0	Control for 78.		

## DATA ON EXPERIMENT USING ARSENOUS SULPHIDE

Aug. 27	80	0	0	Arsenous sulphide(?) (1-50,000).	28 days.....	Adult hatched out in several hours.
27	81	0	0	Arsenous sulphide (1-100,000).	26 days.....	
27	82	0	0	Arsenous sulphide (1-250,000).	25 days.....	
27	83	0	0	Arsenous sulphide (1-500,000).	23 days.....	
27	84	1	0	Arsenous sulphide (1-1,000,000).	32 days.....	

## DATA ON EXPERIMENT USING SOLUTION NO. 18

Sept. 11	85	0	0	No. 18 (1-500,000).....	23 hours.....	Used 20 larvæ.
11	86	0	0	No. 18 (1-1,000,000).....	23 hours and 10 minutes	Do.
11	87	0	0	No. 18 (1-2,500,000).....	do.....	Do.
11	88	0	0	Control for 85, 86, 87.		7 dead and 13 alive; used 20 larvæ.
18	89	0	0	No. 18 (1-500,000).....	17 hours.....	Used 20 larvæ.
18	90	0	0	No. 18 (1-1,000,000).....	do.....	Do.
18	91	0	0	No. 18 (1-2,500,000).....	3 days.....	Do.
18	92	0	0	Control for 89, 90, 91.		3 dead and 17 alive. Used 20 larvæ.
23	93	0	0	No. 18 (1-500,000).....	19 hours and 55 minutes	Used 20 larvæ.
23	94	0	0	No. 18 (1-1,000,000).....	19 hours and 56 minutes	Do.
23	95	0	0	No. 18 (1-2,500,000).....	31 hours and 49 minutes	Do.
23	96	0	0	Control for 93, 94, 95.		All alive. Used 20 larvæ.
30	97	0	0	No. 18 (1-500,000).....	32 hours and 13 minutes	Used 20 larvæ.
30	98	0	0	No. 18 (1-1,000,000).....	32 hours and 16 minutes	Do.
30	99	0	0	No. 18 (1-2,500,000).....	do.....	Do.
30	100	0	0	No. 18 (1-5,000,000).....		11 still living after 2 days. Used 20 larvæ.
30	101	0	0	No. 18 (1-5,000,000).....	2 days.....	Used 20 larvæ.
30	102	0	0	Control for 97, 98, 99, 100, 101.		All alive. Used 20 larvæ.

1 Control.

2 Check on No. 69.

3 Check on No. 70.

4 Check on No. 100.

## DATA ON EXPERIMENT USING SOLUTION NO. 18—Continued

Date	Number of experiment	Number of adults hatched	Number of pupae	Solution No. and dilution	Time till death	Remarks
Oct. 7	103	0	0	No. 18 (1-500,000)	52 hours and 20 minutes	Used 50 larvæ.
7	104	0	0	Control for 103	-----	35 living Oct. 11. Used 50 larvæ.
11	105	0	0	No. 18 (1-5,000,000)	48 hours	Used 50 larvæ.
14	106	0	0	No. 18 (1-5,000,000)	6 days, 7 hours, and 40 minutes	Do.
14	107	0	0	Control for 105 and 106	-----	15 dead, rest alive after 6 days. Used 50 larvæ.

## DATA ON EXPERIMENT USING SOLUTION NO. 19

Sept. 11	108	0	0	No. 19 (1-500,000)	23 hours and 30 minutes	Used 20 larvæ.
11	109	0	0	No. 19 (1-1,000,000)	22 hours and 25 minutes	Do
11	110	0	0	No. 19 (1-2,500,000)	22 hours and 20 minutes	Do
11	111	0	0	Control for 108, 109, 110	-----	7 dead and 13 alive. Used 20 larvæ
18	112	0	0	No. 19 (1-500,000)	17 hours	Used 20 larvæ.
18	113	0	0	No. 19 (1-1,000,000)	do	Do.
18	114	0	0	No. 19 (1-2,500,000)	do	Do
18	115	0	0	Control for 112, 113, 114	-----	5 dead in 17 hours. Used 20 larvæ
23	116	0	0	No. 19 (1-500,000)	20 hours	Used 20 larvæ.
23	117	0	0	No. 19 (1-1,000,000)	do	Do
23	118	0	0	No. 19 (1-2,500,000)	31 hours and 42 minutes	Do.
23	119	0	0	Control for 116, 117, 118	-----	All alive. Used 20 larvæ.
27	120	0	0	No. 19 (1-500,000)	27 hours and 28 minutes	Used 20 larvæ.
27	121	0	0	No. 19 (1-1,000,000)	27 hours and 25 minutes	Do
27	122	0	0	No. 19 (1-2,500,000)	do	Do
27	123	0	0	No. 19 (1-5,000,000)	do	Do
27	124	0	0	Control for 120, 121, 122, and 123	-----	17 alive Sept. 28. Used 20 larvæ
30	125	0	0	No. 19 (1-500,000)	32 hours and 55 minutes	Used 20 larvæ
30	126	0	0	No. 19 (1-1,000,000)	32 hours and 57 minutes	Do
30	127	0	0	No. 19 (1-2,500,000)	33 hours	Do.
30	128	0	0	No. 19 (1-5,000,000)	do	Do.
30	129	0	0	Control for 125, 126, 127, 128	-----	All alive. Used 20 larvæ.
Oct. 7	130	0	0	No. 19 (1-5,000,000)	51 hours and 50 minutes	Used 50 larvæ.
7	131	0	0	No. 19 (1-5,000,000)	27 hours and 45 minutes	Do.
7	132	0	0	No. 19 (1-2,500,000)	33 hours	Do
7	133	0	0	Control for 130, 131, 132	-----	35 living after 4 days. Used 50 larvæ
14	134	0	0	No. 19 (1-5,000,000)	151 hours and 45 minutes (?)	Used 50 larvæ.
14	135	0	0	Control for 134	-----	35 alive on Oct. 20 (?). Used 50 larvæ.
21	136	0	0	No. 19 (1-5,000,000)	31 hours and 40 minutes	Used 25 larvæ.
22	137	0	0	No. 19 (1-5,000,000)	30 hours and 10 minutes	Do.
21	138	0	0	Control for 136 and 137	-----	All alive on Oct. 24. Used 25 larvæ.

## DATA ON EXPERIMENT USING SOLUTION NO. 125

Oct. 7	139	0	0	No. 125 (1-5,000,000)	38 hours and 25 minutes	Used 50 larvæ.
9	140	0	0	No. 125 (1-5,000,000)	26 hours and 30 minutes	Used 20 larvæ.
11	141	0	0	No. 125 (1-5,000,000)	3 days	Used 25 larvæ.
11	142	0	0	No. 125 (1-5,000,000)	20 hours and 15 minutes	Do.
7	143	0	0	Control for 139, 140, 141, 142	-----	15 hatched out, 35 living. Used 50 larvæ.
14	144	0	0	No. 125 (1-5,000,000)	50 hours and 35 minutes	Used 50 larvæ.
14	145	0	0	No. 125 (1-5,000,000)	50 hours and 31 minutes	Do.
14	146	0	0	Control for 144 and 145	-----	35 living Oct. 16. Used 50 larvæ.
21	147	0	0	No. 125 (1-5,000,000)	1 day and 7 hours	Used 25 larvæ.
22	148	0	0	No. 125 (1-5,000,000)	19 hours and 40 minutes	Do.
21	149	0	0	Control for 147 and 148	-----	14 alive, 2 dead, Oct. 23. Used 25 larvæ.

1 Control.

2 Check on No. 138.

4 Check on No. 139.

7 Check on No. 140.

8 Check on No. 141.

9 Check on No. 147.



## LIFE EXPECTANCY IN IRELAND AND COMPARISON WITH OTHER COUNTRIES

In a recent article,<sup>1</sup> life tables for Ireland for the years 1911 and 1926 were compared with similar data for certain other countries. The figures showing the male and female expectancy in Ireland and the comparisons with other countries are of especial interest and are presented here.

Table 1 shows for 1911 and 1926 the complete life expectancy of the Irish people in their own country (by sex) at birth and at 10-year intervals up to 100 years.

TABLE 1.—*Complete expectation of life at specified ages, by sex, for Ireland, 1911 and 1926*

Exact age	1911		1926		Exact age	1911		1926	
	Male	Female	Male	Female		Male	Female	Male	Female
0.....	52.9	53.6	56.7	57.4	60.....	15.6	16.1	15.4	16.1
10.....	52.6	52.6	55.0	54.6	70.....	10.2	10.7	9.7	10.5
20.....	44.1	44.4	46.2	46.1	80.....	5.8	6.1	5.8	6.3
30.....	36.6	36.9	38.2	38.3	90.....	3.0	3.3	3.3	3.6
40.....	29.2	29.6	30.1	30.6	100.....	1.8	2.1	1.8	1.6
50.....	21.9	22.4	22.4	23.0					

The striking feature of the comparison by sex, for either 1911 or 1926, is the similarity of the two curves, not only in general trend but in absolute values, at birth and throughout life. It is the only country for which we have life tables where the female expectancy is not higher than the male. The report states: "In no other country is the vitality of the female population inferior to that of the male population during the most important period of life."<sup>2</sup>

Because of this close agreement of the curves by sex, only the male expectation for 1911 and 1926 is plotted in Figure 1, which presents the data by individual years from birth to 106 years of age. The improvement in expectation is primarily associated with the earlier years of life. At birth there is an addition of almost 4 years. This improvement decreases gradually until, at 45 years of age, the curves have the same value; and they continue practically identical for the remainder of life.

In Table 2 is given a comparison of life expectancy, at birth and at 10-year intervals, for Ireland in 1926 with that for same period for the Irish Free State (comprising about five-sixths of Ireland), for England and Wales for 1921, for the United States (registration area)

<sup>1</sup> Irish life tables, Nos. 1 and 2, for the years 1911 and 1926, and some of the more important deductions from them. By Joseph W. Bigger and Robert A. Q. O'Meara. *Amer. Jour. of Hyg.*, Vol. XV, No. 1, January, 1932, pp. 133-162.

<sup>2</sup> *Idem*, p. 159.

for 1922, and for Germany for 1925. As would be expected, the curves for Ireland and for the Irish Free State are practically the same.

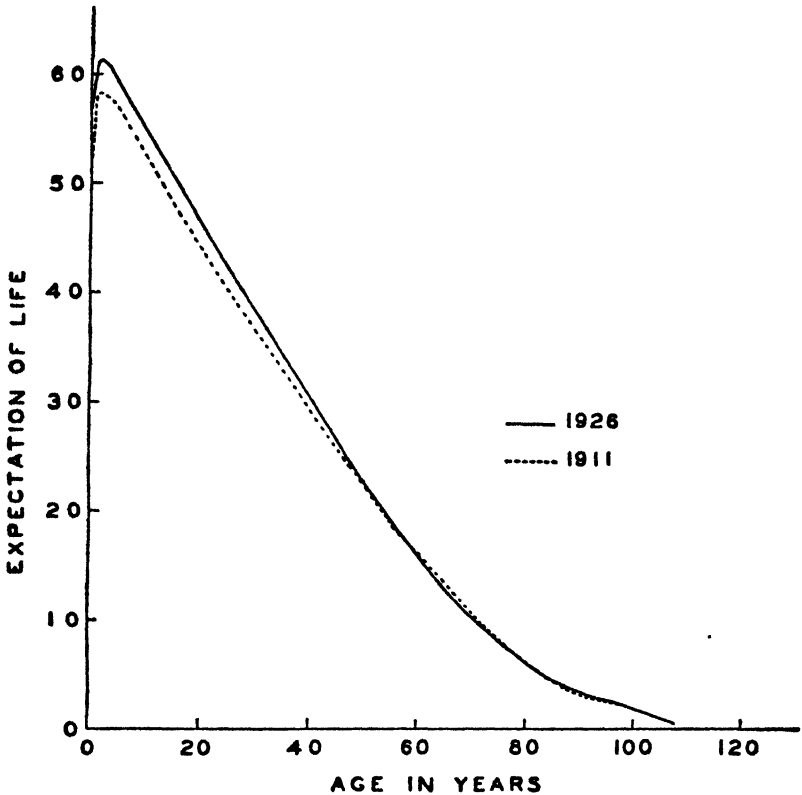


FIGURE 1.—Male life expectation in Ireland for 1911 and 1926, by individual years from birth to 106 years of age

TABLE 2.—Complete expectation of life at certain ages, by sex, for specified countries and dates

Exact age	Males					Females				
	Ireland, 1926	Irish Free State, 1926	England and Wales, 1921	United States registration area 1922	Germany, 1925	Ireland, 1926	Irish Free State, 1921	England and Wales, 1921	United States registration area 1922	Germany, 1925
0	56.7	57.4	55.6	57.8	56.0	57.4	57.9	59.6	59.0	58.8
10	55.0	55.2	54.6	54.1	55.6	51.6	54.9	57.5	55.2	57.1
20	46.2	46.4	45.8	45.4	46.7	46.1	46.4	48.7	46.4	48.1
30	38.2	38.4	37.4	37.3	38.6	38.3	38.6	40.3	38.4	39.8
40	30.1	30.4	29.2	29.3	30.1	30.6	30.8	31.9	30.4	31.4
50	22.4	22.7	21.4	21.7	21.9	23.0	23.2	23.7	22.7	23.1
60	15.4	15.8	14.4	14.8	14.6	16.1	16.4	16.2	15.6	15.8
70	9.7	10.0	8.7	9.2	8.7	10.5	10.7	10.0	9.8	9.8
80	5.8	5.8	4.9	5.2	4.8	6.5	6.5	5.6	5.6	5.1
90	3.3	3.3	2.8	3.1	(1)	3.6	3.7	3.1	3.2	(1)

<sup>1</sup> Data not available.

For males there are no striking differences in life expectancy in the different countries for the same ages.

For females in Ireland, life expectancy is 1½ to 2 years lower at birth than in any other country included in the table. From 10 to 30 years of age, Ireland and the United States have similar values, lower than for Germany and for England and Wales. No great differences by country are found for the later years of life.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Law relating to inspection of livestock intended for slaughter upheld.*—(Oklahoma Supreme Court; *W. H. Butcher Packing Co. v. Langston*, 7 P. (2d) 631; decided Oct. 27, 1931.) By a 1931 statute (Session Laws 1931, p. 180), the inspection of livestock intended for slaughter was provided for in those counties having a population of more than 65,000 according to the Federal census of 1930. Tulsa county was exempted from the operation of the act. By another 1931 law (Session Laws 1931, p. 181), such inspection was authorized for counties of less than 65,000 population, but this law differed in some respects from the first-mentioned law, one of the differences being that the law pertaining to counties of less than 65,000 population exacted smaller fees in the case of certain kinds of animals. In an action in which it was sought to restrain the enforcement of the act relating to the more populous counties, the supreme court upheld such act, taking the view that it was not discriminatory.

## DEATHS DURING WEEK ENDED MAY 14, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended May 14, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended May 14, 1932	Corresponding week, 1931
Policies in force.....	73, 278, 071	75, 158, 197
Number of death claims.....	14, 360	14, 697
Death claims per 1,000 policies in force, annual rate..	10. 2	10. 2
Death claims per 1,000 policies, first 19 weeks of year, annual rate.....	10. 5	11. 0

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 14, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon midyear population estimates derived from the 1930 census]

City	Week ended May 14, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 19 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality-rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Total (85 cities) .....	8,026	11.5	685	4.58	11.7	629	12.4	13.5
Akron .....	36	7.1	2	25	7.3	1	7.6	8.4
Albany .....	33	13.2	2	41	11.2	2	14.7	15.3
Atlanta .....	80	14.8	9	88	13.3	8	14.1	16.0
White .....	43	12.0	3	44	11.3	6	11.1	12.7
Colored .....	37	20.2	6	172	17.3	2	20.0	22.3
Baltimore .....	225	14.3	15	53	13.1	11	14.6	16.6
White .....	175	13.7	12	54	11.7	6	13.6	15.9
Colored .....	50	17.4	3	48	19.2	5	19.4	22.1
Birmingham .....	66	12.5	8	83	11.4	0	12.1	15.2
White .....	29	8.8	1	16	9.4	0	9.8	11.8
Colored .....	37	18.4	7	159	14.7	0	15.9	20.7
Boston .....	202	13.4	10	30	14.8	22	15.6	16.1
Bridgeport .....	20	7.1	2	36	8.5	1	11.7	12.4
Buffalo .....	151	13.4	13	62	13.6	13	13.9	14.9
Cambridge .....	33	15.1	3	62	15.1	2	14.3	13.9
Camden .....	31	13.6	3	53	9.6	0	16.0	17.0
Canton .....	17	8.2	1	25	13.2	1	10.3	11.8
Chicago .....	674	10.0	57	59	9.8	52	10.8	11.7
Cincinnati .....	162	18.3	8	51	13.1	6	16.5	17.7
Cleveland .....	207	11.8	15	49	10.9	20	12.1	12.5
Columbus .....	83	14.5	11	111	16.8	11	14.6	15.1
Dallas .....	50	9.3	1	-----	13.2	4	11.1	12.5
White .....	36	8.1	1	-----	12.2	3	10.2	11.0
Colored .....	14	15.0	0	-----	17.6	1	15.8	19.5
Dayton .....	45	11.3	1	14	8.7	3	13.3	13.2
Denver .....	67	11.9	7	69	13.2	7	15.8	15.3
Des Moines .....	30	10.7	2	34	13.7	3	12.4	12.0
Detroit .....	258	7.8	22	40	8.2	28	8.5	9.5
Duluth .....	23	11.8	2	58	10.2	1	10.8	11.6
El Paso .....	32	15.6	5	-----	13.4	10	14.3	17.2
Erie .....	31	13.6	3	64	13.3	2	12.3	11.8
Evansville .....	15	7.4	2	67	9.5	1	9.9	11.9
Fall River .....	30	13.6	7	186	10.9	3	13.3	13.4
Flint .....	23	7.1	5	73	5.4	1	8.6	8.0
Fort Wayne .....	20	8.6	1	26	9.7	0	10.7	11.8
Fort Worth .....	27	8.3	4	-----	13.7	6	10.6	12.5
White .....	21	7.6	4	-----	13.8	6	10.2	12.0
Colored .....	6	11.7	0	-----	13.4	0	12.9	15.2
Grand Rapids .....	29	8.7	6	102	8.8	4	9.6	9.8
Houston .....	68	11.0	2	-----	10.8	8	11.2	11.7
White .....	46	10.1	1	-----	10.1	7	10.5	10.8
Colored .....	22	13.4	1	-----	12.6	1	13.2	14.1
Indianapolis .....	82	11.5	12	97	13.4	3	13.7	14.9
White .....	74	11.8	11	101	13.5	3	13.3	14.5
Colored .....	8	9.1	1	69	12.7	0	16.5	18.4
Jersey City .....	75	12.2	9	75	10.1	4	12.1	13.2
Kansas City, Kans .....	28	11.8	2	44	8.9	3	12.9	14.6
White .....	18	9.4	1	27	8.9	1	12.6	13.6
Colored .....	10	22.1	1	128	8.9	2	14.4	19.0
Kansas City, Mo. ....	98	12.3	7	79	12.5	4	13.0	14.8
Knoxville .....	26	12.1	6	126	13.8	4	12.8	14.2
White .....	19	10.6	5	140	12.6	3	11.6	13.2
Colored .....	7	20.0	0	0	20.5	1	18.8	19.4
Long Beach .....	23	7.5	0	0	6.5	0	9.8	10.3
Los Angeles .....	263	9.9	20	59	10.8	15	11.2	11.4
Louisville .....	82	13.9	7	64	11.7	4	14.3	16.8
White .....	64	12.8	6	63	10.0	3	12.9	14.7
Colored .....	18	19.7	1	75	20.8	1	22.0	25.3
Lowell .....	21	11.0	2	52	12.5	4	14.6	14.0
Lynn .....	21	10.7	1	28	15.2	1	11.7	11.8
Memphis .....	83	16.5	5	54	14.9	7	16.8	17.5
White .....	42	13.5	3	51	10.8	4	13.0	14.3
Colored .....	41	21.3	2	60	21.6	3	22.9	22.8

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 14, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931—Continued*

City	Week ended May 14, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 19 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality-rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Miami <sup>6</sup>	27	12.4	2	56	13.0	1	12.5	13.9
White	15	8.9	1	39	13.2	1	11.5	13.1
Colored	12	24.8	1	101	12.4	0	16.2	16.5
Milwaukee	113	9.8	10	48	8.4	12	9.6	10.4
Minneapolis	99	10.7	8	52	11.2	9	11.3	12.0
Nashville <sup>6</sup>	42	14.0	4	60	18.4	4	15.4	17.8
White	28	12.8	2	39	13.9	2	14.2	16.5
Colored	14	17.1	2	126	19.5	2	18.7	24.1
New Bedford <sup>7</sup>	16	7.4	2	58	16.2	5	13.0	13.6
New Haven	45	14.5	3	60	9.9	2	13.5	13.4
New Orleans <sup>6</sup>	131	14.4	9	51	15.4	10	15.8	18.4
White	79	12.3	5	44	12.2	3	13.4	15.0
Colored	52	19.8	4	65	23.2	7	21.6	26.9
New York	1,525	11.0	152	68	11.4	124	11.8	13.0
Bronx Borough	217	8.1	21	61	8.8	16	8.8	9.4
Brooklyn Borough	534	10.4	47	52	10.3	45	11.0	12.0
Manhattan Borough	572	16.8	65	93	17.2	53	18.1	19.9
Queens Borough	163	7.0	17	71	7.1	4	7.5	8.3
Richmond Borough	41	12.8	2	39	15.3	6	14.5	14.3
Newark, N. J.	79	9.2	15	42	10.9	7	11.9	13.3
Oakland	50	8.7	1	13	9.3	3	11.2	11.3
Oklahoma City	36	9.1	3	41	11.4	3	10.8	12.3
Omaha	57	13.6	3	34	15.6	9	14.5	14.5
Paterson	37	13.9	4	73	13.5	4	13.7	15.7
Peoria	25	11.8	2	55	12.0	0	12.1	13.7
Philadelphia	466	12.3	31	48	13.2	44	13.9	15.6
Pittsburgh	180	13.8	28	128	13.0	12	14.5	17.3
Portland, Ore.	62	10.4	1	13	12.9	2	12.0	12.5
Providence	55	11.2	4	39	11.9	3	15.2	14.8
Richmond <sup>6</sup>	53	14.9	6	90	16.1	4	14.9	17.6
White	26	10.3	1	22	13.5	2	12.5	16.2
Colored	27	26.7	5	229	22.7	2	20.9	23.8
Rochester	91	14.2	4	38	14.8	4	13.1	13.7
St. Louis	222	13.9	16	57	12.7	6	14.8	17.4
St. Paul	59	11.0	4	43	10.0	3	11.4	11.6
Salt Lake City <sup>6</sup>	25	9.0	1	16	13.1	2	11.4	13.0
San Antonio	46	9.7	13	18.9	13	14.5	15.9	
San Diego	49	15.7	0	0	16.0	0	15.8	15.0
San Francisco	145	11.4	9	62	14.0	7	13.3	14.1
Schenectady	18	9.8	2	58	8.7	0	11.8	11.8
Seattle	88	12.2	5	50	11.4	3	12.4	12.8
Somerville	10	4.9	1	40	10.4	1	10.1	11.2
South Bend	16	7.5	0	0	6.8	1	8.2	9.0
Spokane	20	8.9	0	0	10.3	0	12.4	13.0
Springfield, Mass.	31	10.5	5	84	14.4	4	11.9	13.8
Syracuse	61	14.8	2	26	10.3	4	12.8	12.8
Tacoma	39	18.8	3	83	13.1	3	12.8	14.1
Tampa <sup>6</sup>	32	15.5	6	171	7.9	1	12.6	13.2
White	19	11.7	4	139	6.9	0	12.0	12.1
Colored	13	29.8	2	317	11.7	1	15.0	17.6
Toledo	50	8.7	3	33	11.8	8	12.5	13.1
Trenton	40	16.8	2	40	10.8	3	17.6	19.0
Utica	31	15.8	1	28	10.2	3	17.5	16.2
Washington, D. C. <sup>6</sup>	155	16.4	12	67	13.8	10	17.5	17.8
White	87	12.7	7	37	12.2	3	15.5	15.2
Colored	68	26.0	5	89	18.2	7	22.6	24.6
Waterbury	12	6.2	1	33	8.8	1	10.2	11.0
Wilmington, Del. <sup>7</sup>	18	8.8	0	0	9.8	2	17.2	16.2
Worcester	53	13.9	4	56	11.1	4	13.5	14.8
Yonkers	17	6.3	1	26	8.3	2	8.5	9.5
Youngstown	30	8.9	3	49	12.4	6	10.8	11.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 80 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 33; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

#### Reports for Weeks Ended May 21, 1932, and May 23, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 21, 1932, and May 23, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931
<b>New England States:</b>								
Maine.....	3	8	5	2	296	5	0	1
New Hampshire.....	3				98	88	0	0
Vermont.....					262		0	0
Massachusetts.....	37	45	2	8	1,156	609	1	2
Rhode Island.....	4	4			84	171	0	0
Connecticut.....	3	6	3	2	299	634	1	2
<b>Middle Atlantic States</b>								
New York.....	93	130	12	17	3,216	3,516	5	12
New Jersey.....	31	40	19	5	1,092	1,104	1	8
Pennsylvania.....	76	67			1,905	3,007	15	10
<b>East North Central States.</b>								
Ohio.....	23	15	11	10	1,526	587	1	3
Indiana.....	19	13	12	12	143	810	4	8
Illinois.....	81	104	87	7	1,174	2,220	5	23
Michigan.....	11	40	13		2,908	355	5	8
Wisconsin.....	9	15	22	14	2,397	702	1	0
<b>West North Central States</b>								
Minnesota.....	9	7	4	1	63	231	2	0
Iowa.....	7	9			6	86	2	0
Missouri.....	32	34		7	100	409	2	8
North Dakota.....	3	1			49	45	0	0
South Dakota.....	2	5		1	7	21	0	0
Nebraska.....	15	2			5	4	0	3
Kansas.....	11	10	1	6	414	112	3	0
<b>South Atlantic States:</b>								
Delaware.....	1					131	0	0
Maryland.....	12	12	9	5	59	1,105	2	4
District of Columbia.....	5	7		1	18	248	0	3
Virginia.....								
West Virginia.....	12	7	39	11	215	131	1	0
North Carolina.....	16	17	74	5	672	854	3	4
South Carolina.....	6	6	25	254	203	130	0	0
Georgia.....	6	5	89	44	55	175	0	3
Florida.....	11	3	5	3	13	118	1	1
<b>East South Central States:</b>								
Kentucky.....	13		37		73	120	1	2
Tennessee.....	8	6	37	19	10	122	1	4
Alabama.....	6	8	26	14	7	138	0	7
Mississippi.....	8	4					0	2

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended May 21, 1932, 8 cases: 1 case in Virginia, 2 cases in Georgia, 2 cases in Florida, 1 case in Alabama, and 2 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 21, 1932, and May 23, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931
<b>West South Central States:</b>								
Arkansas.....	6	4	19	14	1	60	1	0
Louisiana.....	21	20	17	12	52	15	1	3
Oklahoma <sup>1</sup> .....	4	11	15	40	33	23	1	0
Texas <sup>1</sup> .....	18	23	20	31	89	58	0	0
<b>Mountain States:</b>								
Montana.....	1	3	1		117	13	0	1
Idaho.....	3	1				2	0	0
Wyoming.....			1		29	2	0	0
Colorado.....	7	4			104	136	1	0
New Mexico.....	9	6	28	2	36	118	0	0
Arizona.....	5	1	1			52	2	2
Utah <sup>1</sup> .....	3	1		1		2	0	0
<b>Pacific States:</b>								
Washington.....	5	6			223	405	0	0
Oregon.....	8	6	30	15	256	96	0	1
California.....	75	76	59	35	696	1, 110	2	4
	741	792	1, 323	588	20, 161	20, 080	65	123
Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931
<b>New England States:</b>								
Maine.....	0	0	25	24	0	0	2	0
New Hampshire.....	0	0	38	4	0	0	0	0
Vermont.....	0	0	12	7	7	5	0	1
Massachusetts.....	0	2	523	384	0	0	4	4
Rhode Island.....	0	1	63	40	0	0	0	0
Connecticut.....	0	0	106	54	0	0	0	2
<b>Middle Atlantic States</b>								
New York.....	2	4	1, 517	931	3	7	7	14
New Jersey.....	3	1	280	305	0	6	2	3
Pennsylvania.....	1	1	1, 024	404	0	0	5	13
<b>East North Central States</b>								
Ohio.....	1	0	225	221	19	46	1	6
Indiana.....	0	0	52	145	6	98	1	0
Illinois.....	1	1	281	524	3	75	8	5
Michigan.....	1	0	464	470	4	29	7	4
Wisconsin.....	0	0	63	121	0	2	1	2
<b>West North Central States:</b>								
Minnesota.....	0	2	90	69	5	5	1	0
Iowa.....	0	0	39	69	45	57	4	2
Missouri.....	0	0	33	167	0	24	6	7
North Dakota.....	0	0	5	29	6	6	0	1
South Dakota.....	0	0	5	4	0	16	0	0
Nebraska.....	0	0	25	39	12	24	0	0
Kansas.....	1	0	25	44	12	74	4	3
<b>South Atlantic States:</b>								
Delaware.....	0	0	11	14	0	0	1	1
Maryland <sup>1</sup> .....	0	2	80	79	0	0	4	5
District of Columbia.....	0	0	20	13	0	0	1	2
Virginia <sup>1</sup> .....	1							
West Virginia.....	0	0	14	40	0	8	13	5
North Carolina.....	0	1	40	34	0	0	13	1
South Carolina.....	1	0	3	6	0	6	18	10
Georgia <sup>1</sup> .....	0	0	6	63	0	0	10	6
Florida <sup>1</sup> .....	0	0	1	2	0	0	8	5

<sup>1</sup>Week ended Friday.

<sup>2</sup>Typhus fever, week ended May 21, 1932, 8 cases: 1 case in Virginia, 2 cases in Georgia, 2 cases in Florida, 1 case in Alabama, and 2 cases in Texas.

<sup>3</sup>Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 21, 1932, and May 23, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931	Week ended May 21, 1932	Week ended May 23, 1931
<b>East South Central States</b>								
Kentucky.....	0	0	91	33	12	4	4	3
Tennessee.....	0	0	10	22	14	9	10	6
Alabama <sup>1</sup> .....	0	1	5	29	13	6	3	7
Mississippi.....	0	0	6	15	21	37	6	13
<b>West South Central States</b>								
Arkansas.....	0	0	2	12	7	33	4	5
Louisiana.....	0	0	14	23	16	14	23	7
Oklahoma <sup>1</sup> .....	1	0	5	22	13	52	0	3
Texas <sup>1</sup> .....	0	0	20	23	23	40	5	6
<b>Mountain States:</b>								
Montana.....	0	0	14	16	4	1	1	0
Idaho.....	0	0	6	4	0	1	0	1
Wyoming.....	0	0	6	9	0	1	0	0
Colorado.....	0	0	25	36	2	6	2	0
New Mexico.....	0	0	12	7	0	1	3	2
Arizona.....	0	0	11	3	0	0	0	2
Utah <sup>1</sup> .....	0	0	1	4	0	1	2	0
<b>Pacific States</b>								
Washington.....	0	0	14	38	22	26	2	4
Oregon.....	0	0	8	13	10	19	4	0
California.....	2	3	203	114	17	21	11	9
	15	19	5, 523	4, 729	296	757	196	170

<sup>1</sup> Week ended Friday

<sup>2</sup> Typhus fever, week ended May 21, 1932, 8 cases: 1 case in Virginia, 2 cases in Georgia, 2 cases in Florida, 1 case in Alabama, and 2 cases in Texas

<sup>3</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Men- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Mea- sles	Pol- iogra	Poli- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>April, 1932</i>										
Alabama.....	9	77	1,301	74	111	45	2	71	81	39
Idaho.....		5	2		3			26	5	1
Illinois.....	26	305	395	5	3,942		7	1,602	31	25
Kansas.....	5	36	22		1,979		0	233		5
Louisiana.....	3	101	82	33	253	27	5	45	17	69
Maryland.....	3	52	538	3	165		0	543	0	23
Michigan.....	18	76	93		7,363	3	3	1,821	27	23
Minnesota.....	5	47	17		171		0	611	6	4
Missouri.....	14	142	1,109	19	367		11	1,229		16
Montana.....	2	7	46		486		0	55	20	3
New York.....	30	461		2	9,335		3	6,845	32	30
Ohio.....	16	182	386	1	8,911		2	1,674	94	35
Pennsylvania.....	45	338			8,418	1	8	3,523	0	42
Rhode Island.....	1	23	4		602		0	272	0	3
Texas.....	1	158	1,392	345		1	4	166		24
West Virginia.....	9	51	969		1,758		1	119	8	24
Wisconsin.....	6	42	750		7,910		3	390	9	14

<sup>1</sup> Exclusive of St. Louis, Kansas City, and St. Joseph.



<i>April, 1932</i>		<b>Lethargic encephalitis—Continued</b>	
	Cases		Cases
<b>Actinomycosis:</b>		<b>Pennsylvania</b> .....	8
Montana.....	1	<b>Texas</b> .....	2
Pennsylvania.....	1	<b>Wisconsin</b> .....	2
<b>Anthrax:</b>		<b>Mumps:</b>	
Montana.....	1	Alabama.....	199
New York.....	2	Idaho.....	68
<b>Chicken pox:</b>		Illinois.....	357
Alabama.....	221	Kansas.....	537
Idaho.....	154	Louisiana.....	6
Illinois.....	1,150	Maryland.....	646
Kansas.....	570	Michigan.....	1,483
Louisiana.....	22	Missouri.....	280
Maryland.....	577	Montana.....	34
Michigan.....	955	New York.....	1,753
Minnesota.....	190	Ohio.....	879
Missouri.....	317	Pennsylvania.....	3,121
Montana.....	116	Rhode Island.....	221
New York.....	2,459	West Virginia.....	14
Ohio.....	1,198	Wisconsin.....	1,020
Pennsylvania.....	2,756	<b>Ophthalmia neonatorum</b>	
Rhode Island.....	31	Illinois.....	4
West Virginia.....	104	New York.....	5
Wisconsin.....	1,230	Ohio.....	54
<b>Dengue:</b>		Pennsylvania.....	11
Alabama.....	1	<b>Paratyphoid fever:</b>	
<b>Diarrhea:</b>		Illinois.....	2
Maryland.....	9	Kansas.....	2
<b>Diarrhea and enteritis:</b>		Minnesota.....	1
Ohio (under 2 years).....	10	New York.....	2
<b>Dysentery:</b>		<b>Puerperal septicemia:</b>	
Illinois.....	9	Illinois.....	4
Maryland.....	3	New York.....	18
New York.....	8	Ohio.....	4
<b>Food poisoning:</b>		Pennsylvania.....	36
Ohio.....	7	<b>Rabies in animals:</b>	
<b>German measles</b>		Illinois.....	10
Illinois.....	46	Louisiana.....	9
Kansas.....	3	Maryland.....	5
Maryland.....	20	Missouri.....	4
Montana.....	2	New York.....	8
New York.....	230	<b>Rocky Mountain spotted or tick fever:</b>	
Ohio.....	30	Idaho.....	6
Pennsylvania.....	234	Maryland.....	1
Rhode Island.....	4	Montana.....	11
Wisconsin.....	56	<b>Scabies:</b>	
<b>Hookworm disease:</b>		Kansas.....	9
Louisiana.....	9	Maryland.....	12
<b>Impetigo contagiosa:</b>		Montana.....	4
Illinois.....	4	<b>Septic sore throat:</b>	
Maryland.....	15	Illinois.....	7
Montana.....	1	Kansas.....	2
<b>Lead poisoning:</b>		Maryland.....	6
Illinois.....	1	Michigan.....	30
Ohio.....	7	Missouri.....	5
<b>Leprosy:</b>		Montana.....	6
Illinois.....	1	New York.....	33
Louisiana.....	2	Ohio.....	222
<b>Lethargic encephalitis:</b>		Rhode Island.....	3
Alabama.....	1	<b>Tetanus:</b>	
Illinois.....	6	Illinois.....	4
Maryland.....	1	Louisiana.....	2
Michigan.....	4	Maryland.....	2
Minnesota.....	1	New York.....	3
New York.....	10	Ohio.....	1
Ohio.....	2	Pennsylvania.....	3

\* Exclusive of New York City

Trachoma:	Cases	Undulant fever—Continued.	Cases
Illinois.....	5	Ohio.....	3
Montana.....	2	Pennsylvania.....	6
New York.....	1	Wisconsin.....	6
Ohio.....	7	Vincent's angina:	
Pennsylvania.....	1	Illinois.....	23
Trichinosis:		Kansas.....	72
New York.....	3	Maryland.....	12
Tularaemia:		New York <sup>1</sup> .....	57
Alabama.....	3	Whooping cough:	
Illinois.....	3	Alabama.....	304
Kansas.....	1	Illinois.....	1,538
Louisiana.....	2	Kansas.....	433
Ohio.....	1	Louisiana.....	56
Typhus fever:		Maryland.....	832
Alabama.....	12	Michigan.....	1,541
New York.....	2	Minnesota.....	186
Undulant fever:		Missouri.....	604
Illinois.....	6	Montana.....	37
Kansas.....	1	New York.....	2,559
Maryland.....	4	Ohio.....	2,771
Michigan.....	5	Pennsylvania.....	3,136
Minnesota.....	2	Rhode Island.....	63
Missouri.....	9	West Virginia.....	457
New York.....	13	Wisconsin.....	1,505

### RECIPROCAL NOTIFICATIONS

*Notifications regarding communicable diseases sent during the month of April, 1932, by departments of health of States named to other State health departments*

Disease	California	Connecticut	Illinois	Massachusetts	Minnesota	New York
Gonorrhea.....					3	
Influenza.....				1		
Meningitis.....					1	
Pellagra.....				1		
Pneumonia.....				1		
Scarlet fever.....		1	1	5	1	2
Syphilis.....	10				2	
Tuberculosis.....	10	1	2		21	
Undulant fever.....	1					

### PATIENTS IN INSTITUTIONS FOR EPILEPTICS, JULY-SEPTEMBER, 1930

Reports for the third quarter of the year 1930 were received by the Public Health Service from 13 institutions for the care and treatment of epileptics, located in 13 States. The total number of patients, including those on parole or otherwise absent but still on the books, on September 30, 1930, was 8,953.

The first admissions were as follows:

	Male	Female	Total
July.....	85	63	148
August.....	61	79	140
September.....	59	59	118
Total.....	205	201	406

<sup>1</sup> Exclusive of New York City.

Of the new admissions during the three months, 50.5 per cent were males and 49.5 per cent were females, giving a ratio of 102 males per 100 females.

During the quarter 228 patients were discharged, 142 males and 86 females. Eighty-four male patients and 66 female patients died. The annual death rates, based on the number of patients on the rolls of the institutions on September 30, 1930, were: Males, 70.3 per 1,000; females, 62.2 per 1,000; total patients, 66.5 per 1,000.

At the end of September there were 113 males per 100 females in the institutions.

The following table shows for the 13 institutions the numbers of patients in the hospitals and on parole on July 1, 1930, and at the end of each month of the third quarter of the year.

	July 1, 1930	July 31, 1930	Aug. 31, 1930	Sept. 30, 1930
<b>Patients in hospitals.</b>				
Male .....	4,361	4,372	4,434	4,463
Female .....	3,903	3,910	3,990	4,035
Total .....	8,264	8,282	8,424	8,498
<b>Patients on parole</b>				
Male .....	330	357	286	280
Female .....	206	236	191	175
Total .....	536	593	480	455
<b>Total patients on books:</b>				
Male .....	4,691	4,729	4,720	4,743
Female .....	4,109	4,146	4,184	4,210
Total .....	8,800	8,875	8,904	8,953
<b>Per cent of total patients on parole.</b>				
Male .....	7.0	7.5	6.1	5.9
Female .....	5.0	5.7	4.6	4.2
Total .....	6.1	6.7	5.4	5.1

## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,050,000. The estimated population of the 91 cities reporting deaths is more than 32,490,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

## Weeks ended May 14, 1932, and May 16, 1931

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	714	799	-----
98 cities.....	287	402	709
Measles:			
45 States.....	22,412	21,366	-----
98 cities.....	7,533	9,008	-----
Meningococcus meningitis			
46 States.....	69	120	-----
98 cities.....	36	62	-----
Polioomyelitis:			
46 States.....	15	21	-----
Scarlet fever			
46 States.....	5,643	5,401	-----
98 cities.....	2,844	2,500	1,409
Smallpox			
46 States.....	287	890	-----
98 cities.....	32	112	66
Typhoid fever:			
46 States.....	172	190	-----
98 cities.....	36	31	27
<i>Deaths reported</i>			
Influenza and pneumonia.			
91 cities.....	696	672	-----
Smallpox			
91 cities.....	0	1	-----
Memphis, Tenn.....	0	1	-----

## City reports for week ended May 14, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	0	0	1	-----	0	8	9	2
New Hampshire:								
Concord.....	0	0	0	-----	0	2	0	0
Manchester.....	0	0	0	-----	0	0	0	1
Nashua.....	0	0	0	-----	0	0	0	0
Vermont:								
Barre.....	0	0	0	-----	0	0	1	0
Burlington.....	0	0	0	-----	0	0	3	0
Massachusetts:								
Boston.....	46	25	15	1	1	129	87	17
Fall River.....	3	2	0	1	1	46	2	4
Springfield.....	12	2	0	-----	0	253	12	0
Worcester.....	10	3	3	-----	0	5	0	5
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	5	5	1	-----	0	32	4	2

## City reports for week ended May 14, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.								
Connecticut:								
Bridgeport.....	1	3	0	-----	0	21	0	0
Hartford.....	2	3	0	3	0	2	13	6
New Haven.....	22	1	0	1	1	1	21	5
MIDDLE ATLANTIC								
New York:								
Buffalo.....	25	9	2	-----	0	56	3	18
New York.....	313	230	82	20	9	473	177	184
Rochester.....	3	3	0	-----	0	26	12	3
Syracuse.....	12	1	0	-----	0	274	0	3
New Jersey:								
Camden.....	9	6	2	-----	0	0	0	2
Newark.....	72	13	3	5	1	62	239	10
Trenton.....	9	2	0	-----	0	4	0	3
Pennsylvania:								
Philadelphia.....	73	55	5	9	6	7	55	38
Pittsburgh.....	62	15	1	2	5	190	42	30
Reading.....	13	1	0	-----	0	8	0	2
Scranton.....	0	-----	2	-----	0	2	0	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	4	5	1	-----	4	0	0	11
Cleveland.....	125	21	5	14	2	1,013	75	17
Columbus.....	16	3	3	1	1	49	1	4
Toledo.....	31	3	1	1	1	75	2	4
Indiana:								
Fort Wayne.....	1	1	6	-----	0	1	0	0
Indianapolis.....	48	3	0	-----	0	23	200	12
South Bend.....	2	1	0	-----	0	9	0	0
Terre Haute.....	5	0	0	-----	0	20	0	1
Illinois:								
Chicago.....	119	78	24	2	4	628	12	64
Springfield.....	7	0	2	-----	0	0	9	1
Michigan:								
Detroit.....	102	40	13	2	1	947	66	23
Flint.....	11	2	0	7	0	184	49	7
Grand Rapids.....	5	1	0	-----	1	94	10	2
Wisconsin:								
Kenosha.....	1	0	0	-----	0	183	0	1
Madison.....	1	0	0	-----	0	1	-----	-----
Milwaukee.....	79	10	0	-----	0	1,604	9	8
Racine.....	13	0	0	-----	0	219	22	1
Superior.....	0	0	0	-----	0	0	17	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	8	0	0	-----	1	0	0	0
Minneapolis.....	33	10	2	-----	0	18	35	9
St. Paul.....	13	7	1	-----	0	3	34	4
Iowa:								
Davenport.....	0	0	2	-----	-----	0	3	-----
Des Moines.....	0	0	5	-----	-----	0	0	-----
Sioux City.....	9	0	0	-----	-----	0	2	-----
Waterloo.....	2	0	1	-----	-----	1	1	-----
Missouri:								
Kansas City.....	17	3	4	-----	0	24	27	6
St. Joseph.....	1	0	1	-----	0	0	1	3
St. Louis.....	36	29	11	-----	-----	13	12	7
North Dakota:								
Fargo.....	18	0	0	-----	1	17	0	0
Grand Forks.....	0	0	0	-----	-----	14	0	-----
South Dakota:								
Aberdeen.....	0	0	0	-----	-----	1	0	-----
Nebraska:								
Omaha.....	15	2	9	-----	0	2	19	4
Kansas:								
Topeka.....	34	1	0	-----	0	2	3	1
Wichita.....	0	1	0	-----	0	54	5	1

## City reports for week ended May 14, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	2	1	0	-----	0	0	1	0
Maryland:								
Baltimore.....	118	17	6	4	2	9	115	22
Cumberland.....	2	0	0	-----	0	45	0	0
Frederick.....	0	0	1	-----	0	1	0	0
District of Columbia:								
Washington.....	44	10	3	-----	0	26	0	10
Virginia:								
Lynchburg.....	9	0	0	-----	0	0	0	1
Norfolk.....	2	0	0	-----	0	3	0	0
Richmond.....	2	2	2	-----	1	0	0	1
Roanoke.....	1	0	0	-----	0	0	0	1
West Virginia:								
Charleston.....	2	0	0	-----	0	21	0	0
Wheeling.....	1	0	0	-----	0	29	0	3
North Carolina:								
Raleigh.....	1	1	1	-----	0	2	0	3
Wilmington.....	5	0	0	-----	0	0	0	1
Winston-Salem.....	5	0	0	-----	0	45	8	0
South Carolina:								
Charleston.....	1	0	0	46	1	0	0	3
Columbia.....	2	0	1	-----	0	101	0	1
Greenville.....	0	0	0	-----	0	27	0	0
Georgia:								
Atlanta.....	0	2	0	9	0	1	0	10
Brunswick.....	3	0	0	-----	0	0	0	0
Savannah.....	6	0	0	34	0	9	0	5
Florida:								
Tampa.....	3	1	1	-----	0	0	0	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	1	0	-----	0	0	0	0
Lexington.....	0	-----	0	-----	0	0	0	0
Tennessee:								
Memphis.....	6	2	2	-----	1	-----	0	8
Nashville.....	6	1	1	-----	3	1	1	1
Alabama:								
Birmingham.....	8	1	4	4	2	1	6	5
Mobile.....	1	0	0	-----	1	0	0	1
Montgomery.....	0	0	0	-----	-----	0	25	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	1	-----	-----	0	0	-----
Little Rock.....	0	0	3	-----	0	0	1	1
Louisiana:								
New Orleans.....	1	9	12	1	0	0	0	1
Shreveport.....	2	1	0	-----	0	6	8	3
Texas:								
Dallas.....	4	4	5	1	1	-----	0	2
Fort Worth.....	11	1	2	-----	1	-----	0	0
Galveston.....	0	0	1	-----	0	0	0	1
Houston.....	1	3	6	-----	0	3	0	4
San Antonio.....	0	2	0	-----	1	0	0	5
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	0	0	0
Great Falls.....	1	0	0	-----	0	1	0	0
Helena.....	1	0	0	-----	0	1	0	1
Missoula.....	0	0	0	-----	0	-----	-----	-----
Idaho:								
Boise.....	0	0	0	-----	0	1	1	0
Colorado:								
Denver.....	45	7	3	-----	0	114	58	1
Pueblo.....	21	0	0	-----	1	0	0	4
New Mexico:								
Albuquerque.....	6	0	2	-----	1	23	5	1
Arizona:								
Phoenix.....	0	0	0	-----	0	0	0	2

## City reports for week ended May 14, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN—contd.								
Utah— Salt Lake City....	77	2	0	-----	0	2	8	0
Nevada: Reno.....	0	0	0	-----	0	0	0	2
PACIFIC								
Washington: Seattle.....	15	2	0	-----	-----	87	11	-----
Spokane.....	13	1	0	-----	-----	6	0	-----
Tacoma.....	5	1	0	-----	0	68	5	7
Oregon: Portland.....	2	4	1	-----	0	175	2	5
Salem.....	1	1	0	1	0	23	6	0
California: Los Angeles.....	115	27	32	40	3	15	23	6
Sacramento.....	63	3	0	-----	0	17	0	3
San Francisco.....	76	10	4	2	0	208	8	7

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND											
Maine:											
Portland .....	3	1	0	0	0	1	1	0	0	13	18
New Hampshire											
Concord .....	1	13	0	0	0	0	0	0	0	0	11
Manchester .....	1	0	0	0	0	1	0	0	0	0	17
Nashua .....	0	2	0	0	0	0	0	0	0	0	
Vermont:											
Barre .....	1	0	0	0	0	2	0	0	0	0	3
Burlington .....	0	0	0	1	0	0	0	0	0	0	8
Massachusetts.											
Boston .....	75	135	0	0	0	12	1	1	0	36	202
Fall River .....	5	11	0	0	0	0	0	0	0	0	30
Springfield .....	10	11	0	0	0	0	0	1	0	3	30
Worcester .....	11	36	0	0	0	1	0	2	2	29	53
Rhode Island											
Pawtucket .....	3	0	0	0	0	0	0	0	0	0	13
Providence .....	13	30	0	0	0	1	0	0	0	18	55
Connecticut:											
Bridgeport .....	7	7	0	0	0	0	0	0	0	0	20
Hartford .....	5	5	0	0	0	1	0	1	1	9	41
New Haven .....	5	21	0	0	0	1	0	0	0	13	45
MIDDLE ATLANTIC											
New York:											
Buffalo .....	24	95	0	1	0	6	0	0	0	36	149
New York .....	282	977	0	0	0	102	8	7	1	150	1,525
Rochester .....	10	58	0	0	0	2	0	1	0	4	84
Syracuse .....	13	38	0	0	0	1	0	0	0	35	61
New Jersey:											
Camden .....	5	42	0	0	0	0	0	0	0	3	81
Newark .....	28	41	0	0	0	3	0	1	0	38	83
Trenton .....	2	13	0	0	0	1	0	0	0	2	40
Pennsylvania:											
Philadelphia .....	103	235	0	0	0	28	2	1	0	117	466
Pittsburgh .....	31	51	0	0	0	11	0	0	0	41	180
Reading .....	5	22	0	0	0	1	0	0	0	22	23
Scranton .....		14		0	0	0		0	0	2	

## City reports for week ended May 14, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths reported	Typhoid fever			Whoop- ing cough, cases reported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST NORTH CEN- TRAL											
Ohio:											
Cincinnati.....	23	51	3	0	0	9	0	0	0	12	162
Cleveland.....	46	82	1	0	0	13	1	1	0	124	207
Columbus.....	4	1	1	6	0	3	0	0	0	70	83
Toledo.....	11	8	0	0	0	5	0	0	0	59	50
Indiana:											
Fort Wayne.....	5	2	0	0	0	0	0	0	0	5	23
Indianapolis.....	16	5	6	0	0	4	0	0	0	42	—
South Bend.....	5	2	0	0	0	3	0	0	0	3	16
Terre Haute.....	3	0	0	0	0	1	0	0	0	0	17
Illinois:											
Chicago.....	129	199	3	0	0	40	2	2	0	74	674
Springfield.....	4	1	1	1	0	0	0	1	0	16	17
Michigan:											
Detroit.....	120	268	1	0	0	20	1	0	0	150	258
Flint.....	12	4	2	0	0	2	0	0	0	21	23
Grand Rapids.....	12	5	1	0	0	1	0	0	0	6	29
Wisconsin:											
Kenosha.....	3	2	0	0	0	0	0	0	0	0	13
Madison.....	3	1	0	0	—	—	0	0	—	30	—
Milwaukee.....	30	23	1	0	0	7	0	0	0	88	113
Racine.....	2	0	0	0	0	0	0	0	0	0	10
Superior.....	2	2	0	0	0	0	0	0	0	0	11
WEST NORTH CEN- TRAL											
Minnesota:											
Duluth.....	7	3	0	0	0	1	0	1	0	0	23
Minneapolis.....	28	83	0	1	0	1	0	0	0	15	99
St. Paul.....	19	18	0	0	0	6	0	3	0	23	64
Iowa:											
Davenport.....	1	9	6	0	—	—	0	0	—	0	—
Des Moines.....	6	14	2	0	—	—	0	0	—	0	30
Sioux City.....	3	1	1	6	—	—	0	0	—	2	—
Waterloo.....	1	0	0	0	—	—	0	0	—	2	—
Missouri:											
Kansas City.....	17	23	0	0	0	8	0	0	0	23	98
St. Joseph.....	3	1	0	0	0	2	0	0	0	0	32
St. Louis.....	61	14	2	0	0	14	0	1	0	26	222
North Dakota:											
Fargo.....	2	0	0	0	0	0	0	0	0	0	7
Grand Forks.....	1	0	0	0	—	—	0	0	—	0	—
South Dakota:											
Aberdeen.....	1	0	0	0	—	—	0	0	—	2	—
Nebraska:											
Omaha.....	4	10	5	4	0	3	0	0	0	2	57
Kansas:											
Topeka.....	2	0	0	0	0	0	0	0	0	24	17
Wichita.....	4	0	1	0	0	1	0	0	0	10	27
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	4	6	0	0	0	0	0	0	0	2	18
Maryland:											
Baltimore.....	40	53	0	0	0	12	2	0	0	110	225
Cumberland.....	0	0	0	0	0	0	0	0	0	2	10
Frederick.....	0	1	0	0	0	0	0	0	0	0	2
District of Colum- bia:											
Washington.....	23	25	0	0	0	16	0	0	0	26	155
Virginia:											
Lynchburg.....	0	10	0	0	0	1	0	0	0	36	13
Norfolk.....	1	1	1	0	0	1	0	0	0	25	22
Richmond.....	4	5	0	0	0	3	0	0	0	0	51
Roanoke.....	0	6	1	0	0	1	0	0	0	1	20
West Virginia:											
Charleston.....	0	0	0	0	0	1	0	0	0	19	7
Wheeling.....	2	1	0	0	0	1	0	0	1	13	19
North Carolina:											
Raleigh.....	0	0	1	0	0	0	0	0	0	0	13
Wilmington.....	0	0	0	0	0	0	0	0	0	20	10
Winston-Salem.....	1	11	1	0	0	2	0	0	0	21	11



## City reports for week ended May 14, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
SOUTH ATLANTIC— continued											
South Carolina:											
Charleston.....	0	1	1	0	0	3	0	3	0	0	21
Columbia.....	0	0	0	0	0	0	0	0	0	2	4
Greenville.....	1	2	1	0	0	0	0	0	0	6	-----
Georgia:											
Atlanta.....	6	3	3	0	0	5	0	0	0	0	80
Brunswick.....	0	0	0	0	0	0	0	0	0	0	4
Savannah.....	0	2	0	0	0	3	1	1	0	6	30
Florida:											
Tampa.....	0	0	0	0	0	1	0	0	0	0	33
EAST SOUTH CEN- TRAL											
Kentucky:											
Covington.....	2	0	1	0	0	1	0	0	0	0	15
Lexington.....	0	0	0	0	0	0	0	0	0	0	12
Tennessee:											
Memphis.....	9	1	1	1	0	7	1	0	0	21	83
Nashville.....	2	0	0	0	0	5	1	0	0	8	42
Alabama:											
Birmingham.....	1	2	1	0	0	6	1	0	0	24	66
Mobile.....	0	0	0	1	0	0	0	0	0	0	18
Montgomery.....	0	0	0	1	-----	-----	0	0	-----	0	-----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0	-----	-----	0	0	-----	0	-----
Little Rock.....	0	0	0	0	0	1	0	0	0	13	3
Louisiana:											
New Orleans.....	11	2	0	2	0	12	2	1	1	0	131
Shreveport.....	0	0	1	0	0	1	0	0	1	6	34
Texas:											
Dallas.....	4	3	2	0	0	2	0	1	0	19	50
Fort Worth.....	3	5	4	2	0	4	0	2	0	0	27
Galveston.....	0	0	1	0	0	1	1	2	1	0	16
Houston.....	1	0	2	0	0	3	0	1	0	0	68
San Antonio.....	0	2	0	0	0	2	0	0	0	0	46
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	6
Great Falls.....	1	0	0	0	0	0	0	0	0	0	6
Helena.....	0	0	0	0	0	0	0	0	0	0	3
Missoula.....	0	0	0	0	0	0	0	0	0	0	10
Idaho:											
Boise.....	0	1	0	2	0	0	0	0	0	0	7
Colorado:											
Denver.....	13	13	1	0	0	7	0	0	0	29	70
Pueblo.....	0	0	0	0	0	0	0	1	0	6	15
New Mexico:											
Albuquerque.....	0	0	0	0	0	3	0	0	0	0	12
Arizona:											
Phoenix.....	1	0	0	0	0	2	0	0	0	6	-----
Utah:											
Salt Lake City.....	3	3	0	0	0	1	0	0	0	10	26
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	7
PACIFIC											
Washington:											
Seattle.....	8	11	3	1	-----	-----	1	0	-----	8	-----
Spokane.....	4	1	6	0	0	0	0	0	0	8	-----
Tacoma.....	2	1	3	2	0	0	0	0	0	0	32
Oregon:											
Portland.....	5	2	8	1	0	2	0	0	0	1	62
Salem.....	0	0	0	0	0	0	0	0	0	0	-----
California:											
Los Angeles.....	32	53	7	2	0	22	0	0	0	71	263
Sacramento.....	2	2	0	0	0	0	0	1	0	5	54
San Francisco.....	21	8	1	1	0	8	1	1	0	11	140

## City reports for week ended May 14, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Connecticut:									
New Haven.....	1	0	0	0	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York 1.....	4	1	1	2	0	0	2	1	0
Pennsylvania:									
Philadelphia.....	2	0	0	0	0	0	0	0	0
Pittsburgh.....	3	1	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	0	0	0	0	0	0	0	1	0
Indiana:									
Indianapolis.....	7	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	5	3	1	0	0	0	0	1	0
Springfield.....	0	2	0	0	0	0	0	0	0
Michigan:									
Detroit.....	1	0	1	0	0	0	0	0	0
Grand Rapids.....	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee.....	0	0	1	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	0	0	1	0	0	0	0	0	0
Iowa:									
Des Moines.....	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	1	1	0	0	0	0	0	0	0
St. Joseph.....	0	1	0	0	0	0	0	0	0
St. Louis.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	0	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	2	1	0	0	0	0	0	0	0
Virginia:									
Roanoke.....	0	0	0	0	0	1	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta.....	1	0	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	1	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Memphis.....	1	0	0	0	0	0	0	0	0
Alabama:									
Mobile.....	0	0	0	0	1	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Fort Smith.....	1	0	0	0	0	0	0	0	0
Louisiana:									
New Orleans.....	1	1	0	0	3	3	0	0	0
Shreveport.....	0	0	0	0	0	2	0	0	0
Montana:									
Missoula.....	1	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Oregon:									
Portland.....	0	1	0	0	0	0	0	0	0
California:									
Los Angeles.....	0	1	0	0	0	0	1	3	0
Sacramento.....	0	0	0	0	1	1	0	0	0
San Francisco.....	2	0	0	0	0	0	0	0	0

1 Typhus fever, 1 case in New York City, N. Y.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 14, 1932, compared with those for a like period ended May 16, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, April 10 to May 14, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Apr 16, 1932	Apr 18, 1931	Apr 23, 1932	Apr 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931
98 cities.....	54	66	51	53	<sup>2</sup> 43	63	<sup>2</sup> 44	<sup>4</sup> 67	44	63
New England.....	29	79	36	58	<sup>2</sup> 21	36	34	38	48	38
Middle Atlantic.....	49	62	55	46	52	61	48	61	42	58
East North Central.....	44	83	41	58	33	84	<sup>4</sup> 34	82	32	72
West North Central.....	49	63	57	67	<sup>7</sup> 56	57	53	71	55	71
South Atlantic.....	49	65	39	51	43	69	<sup>4</sup> 47	63	29	55
East South Central.....	17	23	17	23	<sup>4</sup> 19	6	46	41	40	18
West South Central.....	119	74	102	71	79	68	89	108	92	81
Mountain.....	60	17	86	26	<sup>10</sup> 35	20	<sup>4</sup> 9	<sup>4</sup> 27	26	61
Pacific.....	110	43	59	63	<sup>11</sup> 15	53	<sup>11</sup> 23	61	69	74

## MEASLES CASE RATES

98 cities.....	982	1, 316	1, 107	1, 342	<sup>21</sup> 200	1, 250	<sup>31</sup> 286	<sup>41</sup> 305	1, 157	1, 403
New England.....	765	1, 349	851	1, 286	<sup>21</sup> 318	964	1, 002	1, 653	1, 196	1, 166
Middle Atlantic.....	554	1, 544	579	1, 419	456	1, 411	478	1, 434	487	1, 486
East North Central.....	2, 160	789	2, 680	1, 073	2, 821	896	<sup>4</sup> 3, 406	1, 101	2, 962	1, 311
West North Central.....	724	589	491	830	<sup>7</sup> 421	777	243	1, 016	254	1, 397
South Atlantic.....	298	4, 350	339	4, 055	663	3, 877	<sup>8</sup> 444	3, 559	569	3, 371
East South Central.....	0	1, 627	12	1, 615	<sup>9</sup> 6	1, 439	0	1, 275	12	1, 245
West South Central.....	30	102	26	139	43	156	40	152	30	166
Mountain.....	1, 336	922	1, 043	661	<sup>10</sup> 106	661	<sup>4</sup> 833	<sup>4</sup> 555	1, 069	531
Pacific.....	952	417	916	517	<sup>11</sup> 713	506	<sup>11</sup> 1,759	502	763	555

## SCARLET FEVER CASE RATES

98 cities.....	477	382	455	406	<sup>2</sup> 513	372	<sup>2</sup> 458	<sup>4</sup> 390	437	389
New England.....	796	584	678	575	<sup>8</sup> 971	582	678	630	647	666
Middle Atlantic.....	744	415	721	498	750	409	706	448	709	439
East North Central.....	399	382	369	431	436	402	<sup>4</sup> 405	438	385	453
West North Central.....	267	518	252	469	<sup>7</sup> 226	490	182	440	195	383
South Atlantic.....	310	307	314	305	359	273	<sup>8</sup> 273	277	243	243
East South Central.....	40	587	87	399	<sup>8</sup> 50	411	52	253	17	341
West South Central.....	56	112	46	98	43	132	43	105	23	106
Mountain.....	207	278	190	191	<sup>10</sup> 89	191	<sup>4</sup> 180	<sup>4</sup> 170	147	157
Pacific.....	148	116	171	86	<sup>11</sup> 77	94	<sup>11</sup> 80	106	135	123

## SMALLPOX CASE RATES

98 cities.....	7	22	8	21	<sup>2</sup> 5	23	<sup>2</sup> 7	<sup>4</sup> 15	5	17
New England.....	0	0	0	0	<sup>6</sup> 0	0	0	0	0	0
Middle Atlantic.....	0	2	0	1	0	1	0	3	0	1
East North Central.....	6	19	2	20	3	10	<sup>6</sup> 0	6	4	23
West North Central.....	13	92	15	71	<sup>7</sup> 9	115	13	78	21	75
South Atlantic.....	0	10	0	6	0	6	<sup>6</sup> 0	8	0	6
East South Central.....	46	53	110	35	<sup>6</sup> 62	59	64	41	17	12
West South Central.....	7	95	3	98	0	102	7	64	7	41
Mountain.....	17	9	86	17	<sup>10</sup> 0	0	<sup>4</sup> 142	<sup>4</sup> 9	17	17
Pacific.....	27	27	23	41	<sup>11</sup> 31	51	<sup>11</sup> 19	12	11	26

See footnotes at end of table.

Summary of weekly reports from cities, April 10 to May 14, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Apr. 10, 1932	Apr. 18, 1931	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931
98 cities.....	5	5	5	3	7	6	5	5	6	5
New England.....	0	2	0	2	12	7	0	5	12	5
Middle Atlantic.....	2	4	5	4	5	7	6	5	4	5
East North Central.....	4	2	1	2	3	4	2	2	2	2
West North Central.....	2	4	2	4	5	4	0	2	9	6
South Atlantic.....	12	8	12	2	18	14	10	8	8	12
East South Central.....	35	12	6	6	12	12	17	6	0	18
West South Central.....	10	7	23	0	26	0	10	7	16	7
Mountain.....	9	9	9	9	0	0	0	0	9	0
Pacific.....	6	10	6	4	11	11	11	8	4	0

## INFLUENZA DEATH RATES

91 cities.....	20	17	18	13	14	11	9	12	9	8
New England.....	7	7	12	7	9	7	2	5	7	2
Middle Atlantic.....	23	12	18	12	8	12	8	11	9	7
East North Central.....	20	10	13	6	13	5	5	11	8	5
West North Central.....	20	29	20	18	16	12	12	6	6	9
South Atlantic.....	29	32	29	10	27	20	18	22	8	16
East South Central.....	38	76	38	45	14	19	50	51	44	51
West South Central.....	20	45	30	55	40	38	10	14	7	7
Mountain.....	9	17	9	17	53	26	35	27	9	9
Pacific.....	5	10	9	5	6	2	10	7	7	7

## PNEUMONIA DEATH RATES

91 cities.....	124	161	107	138	107	122	100	117	103	102
New England.....	129	144	146	132	187	154	129	130	98	113
Middle Atlantic.....	162	180	128	165	110	141	120	144	130	121
East North Central.....	74	127	72	98	78	76	88	87	91	73
West North Central.....	143	245	143	230	130	180	70	121	102	109
South Atlantic.....	167	188	118	168	141	180	128	131	120	127
East South Central.....	194	263	113	127	150	121	75	121	63	127
West South Central.....	91	173	101	145	87	152	128	114	57	114
Mountain.....	86	113	112	104	71	61	89	98	69	78
Pacific.....	56	67	51	46	54	46	84	70	53	55

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932 and 1931, respectively.

<sup>2</sup> Newark, N. J., Kansas City, Mo., Fargo, N. Dak., Topeka, Kans., Covington, Ky., Billings, Mont., Denver, Colo., and Los Angeles, Calif., not included.

<sup>3</sup> Columbus, Ohio, Savannah, Ga., Billings, Mont., and Los Angeles, Calif., not included.

<sup>4</sup> Billings, Mont., not included.

<sup>5</sup> Newark, N. J., not included.

<sup>6</sup> Columbus, Ohio, not included.

<sup>7</sup> Kansas City, Mo., Fargo, N. Dak., and Topeka, Kans., not included.

<sup>8</sup> Savannah, Ga., not included.

<sup>9</sup> Covington, Ky., not included.

<sup>10</sup> Billings, Mont., and Denver, Colo., not included.

<sup>11</sup> Los Angeles, Calif., not included.

# FOREIGN AND INSULAR

## CANADA

*Provinces—Communicable diseases—Week ended May 7, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended May 7, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup>					
Nova Scotia		3			
New Brunswick <sup>1</sup>					
Quebec					8
Ontario	1	18		1	3
Manitoba					1
Saskatchewan			2	3	4
Alberta					1
British Columbia	1				1
Total	2	21	2	4	18

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Ontario—Communicable diseases—Comparative—Five weeks ended April 30, 1932.*—The Department of Health of the Province of Ontario, Canada, reports certain communicable diseases for the five weeks ended April 30, 1932, and the corresponding period in 1931, as follows:

Disease	1932		1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	9	7	4	
Chancroid	3			
Chicken pox	604		696	
Conjunctivitis	4			
Diphtheria	129	8	118	7
Erysipelas	21	2	5	
German measles	37		67	
Influenza	835	58	66	4
Jaundice	5			
Lethargic encephalitis	3	1		1
Measles	3,529	4	228	
Mumps	1,422		398	
Paratyphoid fever			2	
Pneumonia		284		149
Poliomyelitis	2			
Scarlet fever	412	4	502	
Septic sore throat	7	2	5	
Smallpox	9		12	
Syphilis	216	1	142	2
Trachoma			1	
Trench mouth	1			
Tuberculosis	352	91	199	52
Typhoid fever	21	1	24	2
Undulant fever	5		9	
Whooping cough	596	2	319	2

*Quebec Province—Communicable diseases—Week ended May 7, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 7, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	19	Tuberculosis.....	69
Diphtheria.....	13	Scarlet fever.....	71
Erysipelas.....	6	Typhoid fever.....	8
German measles.....	6	Undulant fever.....	1
Measles.....	214	Whooping cough.....	46
Ophthalmia neonatorum.....	1		

### LATVIA

*Communicable diseases—March, 1932.*—During the month of March, 1932, cases of certain communicable diseases were reported in Latvia, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Puerperal fever.....	16
Diphtheria.....	62	Scarlet fever.....	51
Erysipelas.....	31	Scurvy.....	2
Influenza.....	1,463	Tetanus.....	1
Measles.....	52	Typhoid fever.....	110
Mumps.....	220	Whooping cough.....	29
Paratyphoid fever.....	3		192
Poliomyelitis.....	3		

### YUGOSLAVIA

*Communicable diseases—April, 1932.*—During the month of April, 1932, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	22	1	Poliomyelitis.....	2	1
Cerebrospinal meningitis.....	13	4	Rabies.....	1	1
Diphtheria.....	447	65	Scarlet fever.....	207	25
Dysentery.....	23	—	Sepsis.....	17	7
Erysipelas.....	156	5	Tetanus.....	18	6
Measles.....	869	20	Typhoid fever.....	126	17
Paratyphoid fever.....	3	—	Typhus fever.....	29	—







## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

[C indicates cases; D, deaths; P, Present]

Place	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Janu-ary, 1932	February, 1932			March, 1932			April, 1932		
					1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-30
Indo-China (French) (see also table above):													
Annam <sup>1</sup> .....					4								
Cambodia <sup>1</sup> .....					3	2							
Cochin-China <sup>1</sup> .....	19	4	3	12	2			6	1	3	4	1	20
Laos <sup>1</sup> .....	18	2	2	16	2			3	1	1	3	3	8
	14	6	14	5	7		P	3	2	4	6	6	18
	13	4	7	4	5			2	1	2	2	3	13
											7		
											3		

<sup>1</sup> Reports incomplete.

PLAGUE<sup>1</sup>

[C indicates cases; D, deaths; P, present]

Place	Oct. 15- Nov. 14, 1931	Nov. 15- Dec. 14, 1931	Dec. 15- Jan. 14, 1932	Jan. 15- Feb. 14, 1932	Week ended—												May 7, 1932	
					February, 1932						March, 1932							
					13	20	27	5	12	19	26	2	9	16	23	30		
Argentina: Cordoba Province <sup>1</sup>	C		1	1														
Azores																		
San Miguel Island	C	5																
Tercera Island	D	16																
Tercera Island	D	6																
Belgian Congo	C		1															
British East Africa (see also table below)																		
Tanganyika	C			10									2					
Uganda	D			10														
	C	145	63	31														
	D	211	138	62	7	1							3	1	1			
Canary Islands, Palma Island—Los Llanos	D			8	5	1							3	1	1			
	D			8														
Ceylon: Colombo	D	1	4	4														P
	D	1	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Plague-infected rats	D	1	1	1														
Chile: Santiago	C	1																
	D	1																
Plague-infected rats	C	1																
China:																		
Kwang Chow Wan	C											8	8					
Shansi Province	D																	
Shensi Province	C	P																
Shensi Province	C	P																
Dutch East Indies:																		
Java—																		
Surabaya	C			2														
	D			2														
Tegal	C																	
Java and Madura	D	512	702	587	496	118	1	103	117	98	79	50						
West Java	D	139	198	203	201	60	14	18	49	54	40	51	65					
	D	139	198	203	200	59	14	17	49	55	40	51	67					

<sup>1</sup> Including plague in the United States and its possessions.<sup>2</sup> 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.







## SMALLPOX

[C indicates cases; D, deaths, P, present]

Place	Oct. 19- Nov. 14, 1931	Nov. 15- Dec. 12, 1931	Dec. 13- 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended--												May 7, 1932
					February, 1932				March, 1932				April, 1932				
					13	20	27	5	12	19	26	2	9	16	23	30	
Aden.....	C				2												
Algeria.....																	
Algiers.....	C	1	1								1						
Constantine Department.....	C																
Southern Territories.....	C																
Brazil.....						2											
Porto Alegre (alastrim).....	C																
Rio de Janeiro.....	D																
Santos.....	C	57	51	35	34	12	3	4	3	1	1	1	2	1			
Sao Paulo.....	C	3	1	2													
British East Africa Tanganyika.....	C																
British East Africa.....	C	18	2	55	24		4	1									
British South Africa.....	D	2		4	7		1										
Northern Rhodesia.....	C																
Southern Rhodesia.....	C			7	5								4				
Canada.....																	
Alberta.....	C	6	3	11													
British Columbia.....	C	2	2	18	8	10	4	3	7	2	1						
Manitoba.....	C			10										1			
Nova Scotia.....	C						1										
Ontario.....	C	15	11	14	6	4	16	1	1	1		3	2	4		1	
North Bay.....	C																
Ottawa.....	C	12															
Toronto.....	C		1	3	1												
Quebec.....	C																
Saskatchewan.....	C	33	34	11	35		23	7	5			1	1	6	2	3	
Chile.....																	
Santiago.....	C	3															
Tocopilla.....	D	2															
China.....				2													
Amoy.....	C	8	46	218	183	35	34	30	22	15	12	8	10	7	5	4	
Canton.....	D	6	36	79	91	11	14	12	7	5	7	3	10	4	3	3	
Foochow.....	D	2	14	18	27	18	6	5	15	21	18	29	11	24	18	22	17
	D	1	P	P	P	P	P	P	P	7	P	P	P	P	P	1	1

123 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 18, 1932.









## On vessels:

Brazilian ship Jabotao at New Orleans from Brazil.  
 S. Tacoma at Manila from Shanghai.  
 S. Crossington Court at Yokohama from Shanghai.  
 S. Bollington Court at Yokohama from Shanghai.  
 S. Victoria City at Brisbane from Shanghai.  
 S. Bellasco at Mobile from Habana, Cuba, and Hull, England.  
 S. Frauentals at Suva from Calcutta.  
 S. Tsayima Maru at Osaka from Shanghai.  
 S. President Jackson at Yokohama from San Francisco via Honolulu.  
 S. Hong Kiang at Singapore from Amoy, via Swatow and Hong Kong.  
 S. Hai Ning and S. Solviken at Hong Kong.  
 S. Mekera at Aden from Colombo.  
 S. Tisadane at Hong Kong from Shanghai and Amoy.  
 S. Peafing at Shanghai.  
 S. Bahdar Penang from Negapatnam.  
 S. MacGillivray at Suva from Rangoon.  
 S. Tauri at Southampton from New Zealand.  
 S. Glenbank at Suva from Aden.

Place	January, 1932						February, 1932						March, 1932						April, 1932												
	No-ven-ber, 1931		De-cem-ber, 1931		Jan-uary, 1932		Febru-ary, 1932		March, 1932		April, 1932		May, 1932		June, 1932		July, 1932		August, 1932		September, 1932		October, 1932		November, 1932		December, 1932				
	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20	1-10	11-20			
Chosen.....	C	7	2	1	1	6	30	Mexico (see also table above).										D	427	419	423										
France.....	D	1				3	9	Morocco.....										C	91	152	279	488									
Guatemala.....	C		6	1				Turkey (see also table above).										C				31									
	D			5														D				1									
				1																											
																						</									

\* Imported case.

\* A suspected case.





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER

[C indicates cases, D, deaths, P, present]

Place	Week ended—															
	February, 1932				March, 1932				April, 1932							
	13	20	27	5	12	19	26	2	9	16	23	30				
Brazil																
Alagoas State—																
Maceio	1															
Utinga	2															
Bahia State	2															
Sobral	1															
Ceara State	1															
Espirito Santo State <sup>1</sup>																
Santa Teresa (about 56 miles from Victoria)																
Pernambuco State—Pau d'Alho	1			1												
Dahomey: Porto Novo	1															
Gold Coast:																
Avudua																
Cape Coast																
Dagomba District																
Salaga																
Tamale																
Yapel	1															
Ivory Coast: Tchin	3															
Nigeria																
Sudan (French): Macina—Kayo Circle	1															
Togo (French): Atakpame—Anie Circle	2															
Upper Volta: Dedougou	1															
Upper Volta: Dedougou	2															

<sup>1</sup> During the 3 weeks ended Apr. 30, 1932, a number of cases of suspected yellow fever were reported in the interior of the State.

X





**UNITED STATES TREASURY DEPARTMENT**

# **PUBLIC HEALTH REPORTS**

ISSUED WEEKLY

**BY THE UNITED STATES  
PUBLIC HEALTH SERVICE**

**VOLUME 47    ::    ::    NUMBER 24**

**JUNE 10 - - - - - 1932**

## **===== SPECIAL ARTICLES =====**

**Prevalence of Communicable Diseases in the United States  
The Duration of Viability and Virulence of Bacillus pestis**



**UNITED STATES  
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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of public health.

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# PUBLIC HEALTH REPORTS

VOL. 47

JUNE 10, 1932

NO. 24

## CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES<sup>1</sup>

April 24–May 21, 1932

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the PUBLIC HEALTH REPORTS, under the section entitled "Prevalence of Disease."

*Influenza.*—All sections of the country showed a significant decrease in influenza during the current period, although the number of cases reported (7,076) for the country as a whole for the four weeks ended May 21 was the highest for this period in four years. A comparison of geographic areas shows that a similar situation existed in all areas except the West North Central. In that area the number of cases reported dropped slightly below the figures for 1931 and 1929, but was almost double the number for the same period in 1930.

*Scarlet fever.*—The total number of cases of scarlet fever (23,174) for the current 4-week period very closely approximated last year's figure for the same period, but was 1.5 times the number reported in 1930 and 1.3 times the number in 1929 for this period. In all areas except the New England and Middle Atlantic the incidence was lower for the current period than for the same time last year. In the Mountain and Pacific, South Central, and West North Central regions the incidence was the lowest in four years. Scarlet fever has been unusually prevalent in the New England and Middle Atlantic States. For the current period the number of cases totaled 14,039, as compared with 9,112, 6,280, and 5,648 for the same period in the years 1931, 1930, and 1929, respectively.

*Typhoid fever.*—For typhoid fever, the number of cases (679) reported for the four weeks ended May 21 was the lowest for the corresponding period in four years. The South Atlantic and South Central States reported slight increases as compared with the same period in 1931 and 1930, but the incidence was considerably below that

<sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service. The numbers of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 46; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

of 1929. The other four geographic areas reported the lowest incidence for the same period in four years.

*Meningococcus meningitis*.—After a rather sharp upward turn during the week ended April 23, the meningococcus meningitis incidence dropped back again to a more normal level. While the New England and Middle Atlantic States seemed mostly responsible for the rise, that area also reported a significant decrease (30 per cent) during the current period. A 35 per cent drop in the number of cases was also noted in the East North Central States. Compared with preceding years, for the country as a whole and for each geographic area, the incidence for the current period was the lowest for that period in four years.

*Measles*.—The number of cases of measles reported for the four weeks ended May 21 was 80,323. This number was approximately the same as was reported for this period last year, but represented an increase of about 4 per cent over the figure for the same period in 1930 and was 32 per cent in excess of the figure for 1929. The East North Central States continued to report an excess in the number of cases, the number for the current period (35,927) being almost twice the number for the same period last year, more than double the number in 1930, and 1.3 times the number in 1929. The South Central States approximated last year's figure, and the other areas showed decreases.

*Poliomyelitis*.—The poliomyelitis incidence was at the seasonal low level during the current 4-week period. Of the 70 cases reported, 10 occurred in California, 6 in Illinois, 4 each in New York, New Jersey, Ohio, and Wisconsin. The others were widely scattered over the country. For the country as a whole the incidence was the lowest in four years. Only one geographic area, the East North Central, showed an increase as compared with last year. While the number reported (20) from that area was not high, it was 1.4 times the number for the same period last year and was almost three times the number reported in 1930.

*Smallpox*.—The total number of cases of smallpox reported for the four weeks ended May 21 was 1,217, as compared with 3,424, 5,512, and 3,795 for the corresponding period in the years 1931, 1930, and 1929, respectively. For this period the New England and Middle Atlantic States reported 34 cases (18 in Vermont and 16 in New York), which is only the second time since the beginning of an outbreak in that area a year ago that the number of cases has been lower for a 4-week period than in the preceding year. In fact, this area, as well as all other areas, reported for the four weeks ended May 21 the lowest incidence of smallpox for this period in four years.

*Diphtheria*.—The incidence of diphtheria continued low. For the period under report the cases totaled 2,903. This was the lowest

number of cases reported for the same period in four years. Each geographic area shared in this favorable situation except the South Central. In that area the disease has been quite prevalent during the past year. While the number of cases (407) for the current four weeks was not high, it was the highest for this period in four years. The Mountain and Pacific States reported a slight decrease from last year's figure, but the incidence was considerably above the level of 1930 and 1929.

*Mortality from all causes.*—The average mortality rate from all causes in large cities, as reported by the Bureau of the Census, was 11.6 per thousand population (annual basis) for the four weeks ended May 21. Compared with preceding years the rate for this period in 1931 was 11.9, and the average for the years 1926 to 1930 was 13.4.

## DURATION OF VIABILITY AND VIRULENCE OF BACILLUS PESTIS\*

By EDWARD FRANCIS, *Medical Director, United States Public Health Service*

Tests are here reported of the viability and virulence of a single strain of *Bacillus pestis* P4-7 after being kept for several years under four different sets of conditions, namely—

(1) A plain agar culture remained unopened and without transfer for nine years at 10° C.

(2) An agar culture was transferred as a stock culture every three months for nine years and stored at 10° C.

(3) The spleen of plague guinea pig 8 was stored entire in glycerin at -15° C. and not tested until after seven years.

(4) A culture isolated from guinea pig 8 was suspended in glycerin, stored at -15° C., and tested at intervals.

*References to the literature.*—Schultz (1) established the viability and virulence of a 4-year-old plague culture. He sealed a culture in a tube of Marmorek bouillon, stored it in a cool place protected from light, and at the end of four years on transfer to fresh bouillon it grew in one to two days. All white mice into which the fresh culture was inoculated subcutaneously died in one to five days from plague.

Uriarte (2) found plague bacilli on culture media viable after 4½ years and still possessing quite high virulence.

McCoy (3) found plague cultures "Manila" and "New York" fully virulent for guinea pigs and white rats four years after original isolation but nonvirulent (4) for guinea pigs and white rats when cultures were tested seven years after isolation. Throughout the seven years the cultures had been subcultured every three or four months at 37° C. on plain agar and after paraffining the cotton stoppers they were stored in a dark room at a temperature of approximately 16° C.

\* From the National Institute of Health, Washington.

Wilson (5) found a plague culture viable and virulent after remaining unopened for 10 years and 5 months. On June 8, 1903, he transplanted a plague culture to plain agar, sealed the tube with paraffin, and stored it in the ice box where it remained unopened until November 14, 1913. On the latter date the culture was transplanted; abundant growth appeared after 48 hours, and a subculture proved virulent for a guinea pig from which *B. pestis* was recovered in pure culture. Another culture of plague which was similarly transferred June 8, 1903, and not opened until November 14, 1913, grew when transferred on the latter date.

Schurupoff (6), working in Astrakhan and the Ural region in 1910, exhumed human corpses from their graves and inoculated guinea pigs with portions of spleen, liver, lung, and lymph glands by the cutaneous method. Corpses of those dead of plague as long as one year yielded viable and virulent plague bacilli, as shown by death of guinea pigs between the ninth and fourteenth days after inoculation and isolation of *B. pestis* from the blood and organs of these animals. Two factors had contributed to the preservation of the bodies in the ground, viz, the freezing temperature of winter and the large salt content (20 per cent) of the earth.

*History of experimental culture.*—Plague culture P4-7 was isolated from a California ground squirrel (*Citellus beecheyi* Richardson) at the plague laboratory of the United States Public Health Service in San Francisco, from which it was received December 11, 1922, at the National Institute of Health, in Washington. On receipt of the culture a 24-hour growth was injected subcutaneously into guinea pigs, which died between the fourth and sixth days, manifesting the typical lesions of plague. From December 11, 1922, to July 4, 1924, the strain was maintained by guinea pig passages which alternated at irregular unrecorded intervals with cultures on plain agar stored at 10° C. From July 4, 1924, to April 20, 1925, the strain was stored in a guinea pig spleen in pure undiluted neutral glycerin at -15° C.

*Fermentation reactions of experimental culture.*—Plague culture P4-7 employed throughout this 9-year study was tested for fermentation of sugars in 1923 before beginning work, and four tests were made again in 1932 upon (1) the culture used in Table 1, series 1; (2) the culture used in Table 2, series 1; (3) the culture isolated from guinea pig of Table 2, series 6; and (4) the culture after it had been transferred quarterly for nine years as a stock culture.

All these tests were in complete agreement. All tests were conducted at 37° C. in ordinary test tubes containing about 10 c c of the medium proposed by Enlows (7), which is composed of water, peptone, potassium and sodium salts, agar 0.15 per cent, brom thymol blue as an indicator, and the fermentable substance. This medium is

semisolid and supports the growth as a pellicle on the surface. A change in color of the medium from blue-green to yellow was taken to indicate acid fermentation. This change began at the surface of the tube and gradually extended to the bottom. The fermentation reactions of plague culture P4-7 are as follows: (1) Fermentation with production of acid but no gas in dextrose, levulose, mannose, mannitol, xylose, trehalose, salicin, maltose, and galactose; (2) slow fermentation of arabinose, dextrin, and adonitol; (3) no fermentation of saccharose, lactose, amygdalin, dulcitol, erythritol, inositol, inulin, raffinose, rhamnose, sorbitol, glycerin, starch or litmus milk; gelatin was not liquefied.

*Cutaneous inoculation.*—Plague material when rubbed on the shaved abraded skin of the abdomen of a guinea pig results in a general infection and death from plague. This method is known as "cutaneous inoculation" and is especially valuable in isolating a pure culture from grossly contaminated material.

(1) AGAR CULTURE UNOPENED FOR NINE YEARS AT 10° C.

On June 10, 1923, plague culture P4-7 was transferred to the slanted surface of a tube of plain agar having water of condensation. After two days' incubation at 37° C., the tube was sealed with a tight-fitting paraffined cork stopper, placed in a darkened cold room at a temperature of approximately 10° C., and left unopened for nine years, after which time it was cultured on plain agar. Growth was present at the end of 48 hours. The third subculture was inoculated subcutaneously into four guinea pigs, from one of which the strain was carried through three successive series of guinea pigs and three white rats by cutaneous inoculation and found to be fully virulent (see Table 1).

(2) AGAR CULTURE TRANSFERRED QUARTERLY FOR NINE YEARS AS A STOCK CULTURE, STORED AT 10° C.

On June 10, 1923, plague culture P4-7 was added to the general collection of stock cultures of the laboratory. Every three months thereafter for nine years this culture was transferred to an agar stab routinely along with other stock cultures. After incubation at 37° C., and dipping the cotton stopper into hot paraffin, stock cultures are stored in a darkened cold room at a temperature of approximately 10° C.

Having been carried nine years as a stock culture, P4-7 was tested for virulence in 1932 when it was transferred to fresh culture medium several times within a few days and two tubes of abundant growth were pooled and injected subcutaneously into five guinea pigs and four white rats, all of which remained well.



TABLE 1.—*Virulence of plague culture P4-7 after nine years on plain agar without transfer at 10° C.*

Guinea pigs	Date of inoculation, 1932	Day of death		Remarks
		Guinea pigs	White rats	
Series 1: Inoculated subcutaneously with culture.	Feb. 10	Sixth.....	.....	Spleen, bipolar bacilli.
		Seventh.....	.....	Do.
		Ninth.....	.....	Subacute plague lesions.
		Eleventh.....	.....	Do.
Series 2: Inoculated cutaneously with spleen from series 1.	Feb. 16	Fifth.....	Second.....	Spleen, bipolar bacilli.
		Eighth.....	Third.....	Acute plague lesions.
		Fourteenth.....	do.....	Subacute plague lesions.
		Eighteenth.....	.....	Do.
Series 3: Inoculated cutaneously with spleen from series 2.	Feb. 21	Fourth.....	.....	Spleen, bipolar bacilli.
		do.....	.....	Acute plague lesions.
		do.....	.....	Do.
		Sixth.....	.....	Do.
Series 4: Inoculated cutaneously with spleen from series 3.	Feb. 25	Fourth.....	.....	Spleen, bipolar bacilli.
		do.....	.....	Do.
		Sixth.....	.....	Acute plague lesions.
		Ninth.....	.....	Do.

The nonvirulence of P4-7 after nine years as a stock culture is in sharp contrast to the high virulence of the culture which remained unopened and without transfer for nine years at 10° C. This difference in virulence is ascribed to the unfavorable influence which heat exerts upon a plague culture when, as a member of a collection of stock cultures, it is subjected quarterly for prolonged periods to 37° C. and to room temperature.

The attendant who transfers our general collection of stock cultures does not maintain a rigid rule of minimal exposure of cultures to heat at times of transfer but may permit them to remain at 37° C. for four or five days and at room temperature for two or three weeks at times of quarterly transfer. Such exposures, when often repeated, are well known to be destructive to virulence of *B. pestis*.

(3) SPLEEN OF GUINEA PIG 8 IN GLYCERIN SEVEN YEARS AT  
—15° C.

On May 3, 1925, plague guinea pig 8 was killed on the sixth day after being rubbed on the abraded skin of the abdomen with spleen tissue of a plague guinea pig. The spleen of pig 8 was placed entire without mutilation in about 30 c c of pure undiluted glycerin in a glass-stoppered bottle and placed in a small room the temperature of which was maintained at approximately —15° C. The bottle remained unopened for seven years, until 1932, when one-third of the spleen was removed for testing and the remainder was replaced in the bottle and returned to —15° C. for retesting several years hence.

One-third of spleen 8, after being agitated in sterile saline solution to free it from glycerin, was cut into small fragments, one of which was tested for viability on culture medium and the remainder were tested for virulence by injection into guinea pigs.

*Viable after seven years.*—A small fragment of spleen was rubbed over the slanted surface of plain agar in a culture tube and then submerged in the water of condensation and incubated at 37° C. Growth was absent during the first 24 hours, but after 48 hours 12 colonies were visible, which were subcultured on the third day. The resultant growth manifested the tenacious character of a plague culture, stained bipolar, and gave the fermentation reactions of plague culture P4-7.

*Virulent after seven years.*—The high virulence of the culture which was recovered direct from spleen 8 is shown in Table 2 by the acute deaths of six successive series of guinea pigs and two series of white rats, none of the inoculated animals having survived. The white rats died sooner than the guinea pigs, which is in accord with the observations of McCoy (8) that "white rats frequently die a day or two earlier than guinea pigs." Added proof of the high virulence of spleen 8 is furnished by the acute deaths of five guinea pigs into which fragments of spleen 8 were injected subcutaneously.

TABLE 2.—*Virulence of plague culture isolated direct from spleen 8 after spleen had remained seven years in glycerin at -15° C.*

Guinea pigs	Date of inoculation, 1932	Day of death		Remarks
		Guinea pigs	White rats	
Series 1: Inoculated cutaneously with culture.	Feb. 16	Fifth.....	.....	Spleen, bipolar bacilli.
		Sixth.....	.....	Do.
		Seventh.....	.....	Acute plague lesions.
		Eighth.....	.....	Do.
Series 2: Inoculated cutaneously with spleen from series 1.	Feb. 22	Fourth.....	Second..	Spleen, bipolar bacilli.
		do.....	do.....	Do.
		Fifth.....	do.....	Do.
Series 3: Inoculated cutaneously with spleen from series 2.	Feb. 26	Fourth.....	.....	Acute plague lesions.
		do.....	.....	Do.
		do.....	.....	Do.
		do.....	.....	Do.
Series 4: Inoculated cutaneously with spleen from series 3.	Mar. 1	Fourth.....	Second..	Spleens bipolar bacilli.
		Elghth.....	Third.....	Do.
		do.....	.....	Subacute plague lesions.
		Eleventh.....	.....	
Series 5: Inoculated cutaneously with spleen from series 4.	Mar. 9	Fourth.....	.....	Acute plague lesions.
		do.....	.....	Do.
		do.....	.....	Do.
		Fifth.....	.....	Spleen, bipolar bacilli.
Series 6: Inoculated cutaneously with spleen from series 5.	Mar 13	Third.....	.....	Acute plague lesions.
		Fourth.....	.....	Do.
		do.....	.....	Do.
		do.....	.....	Do.
		do.....	.....	Do.
		do.....	.....	Do.

*Gross lesions in guinea pig and white rat.*—Table 2 demonstrates the high virulence for guinea pigs and white rats of plague spleen 8 after seven years' glycerination at  $-15^{\circ}$  C. The lesions produced will be referred to only in a general way.

Acute plague in guinea pigs, induced by cutaneous inoculation on the abdomen, shows, at the site of inoculation, edema, hemorrhage, and necrosis. The inguinal and pelvic lymph nodes are enlarged, soft, caseous, surrounded by edema and hemorrhage, and in smears show enormous numbers of bipolar bacilli, among which are round forms with clear center, when stained especially by methylene blue.<sup>1</sup> Spleen is enlarged, studded throughout with numerous focal lesions and rich in bipolar bacilli. Liver may show small nodules, but not with the same constancy as does the spleen. Lungs may show small discrete round spots on the surface.

Subacute plague in the guinea pig shows the inguinal and pelvic lymph glands much enlarged, firm, fibrous, and with pus at the center. Spleen is enlarged and contains a few rather large, firm nodules. Liver may contain firm, small nodules. Lungs may be consolidated or contain a few firm, large round nodules.

White rats, dead of acute laboratory infection of plague, do not manifest striking gross lesions. The spleen is enlarged, rarely shows nodules, and is rich in bipolar bacilli. The inguinal and axillary lymph nodes are only moderately enlarged, are firm, and are rich in bipolar bacilli. The liver occasionally shows a very fine white granular condition on the surface.

#### (4) PLAGUE BACILLI SUSPENDED IN GLYCERIN AT $-15^{\circ}$ C.

On May 3, 1925, plague guinea pig 8 was killed, and a culture was obtained from its heart blood. This culture was transferred to 16 plain agar tubes from which the growth was removed with a platinum loop and transferred to a rubber stoppered bottle containing about 5 c c of pure undiluted glycerin and placed at  $-15^{\circ}$  C. The culture before glycerination was inoculated subcutaneously into three guinea pigs and six white rats, causing death of the rats on the third and fourth days and death of the guinea pigs on the fifth, sixth, and seventh days.

*Virulent after nine months.*—The bacilli when tested after nine months of glycerination at  $-15^{\circ}$  C. grew on culture medium in 48 hours, and the resultant growth was fully virulent for three guinea pigs inoculated subcutaneously, killing them on the third, fourth, and sixth days and causing the typical acute lesions of plague in spleen and inguinal lymph nodes.

<sup>1</sup> Methylene blue, 0.75; basic fuchsin (saturated alcoholic solution), 2.5; carbolie acid (5 per cent solution), 88.0; alcohol (95 per cent) 10.0. Fix with heat, stain one minute. This formula originated in the plague laboratory of the U. S. Public Health Service at San Francisco and is excellent.

*Virulent after 14 months.*—The bacilli when tested after 14 months of glycerination at  $-15^{\circ}$  C. grew promptly on culture medium, and the resultant growth was quite virulent for four guinea pigs inoculated subcutaneously, causing death on the sixth, eighth, ninth, and tenth days with typical plague lesions of spleen and lymph nodes.

*Slightly virulent after two years seven months.*—The bacilli after two years seven months of glycerination at  $-15^{\circ}$  C. were inoculated subcutaneously into 4 guinea pigs, 1 of which died on the twenty-first day with caseous inguinal and pelvic lymph nodes, spleen negative; 1 died in the tenth week manifesting a caseous lymph node in the groin; 1 recovered, having had enlarged inguinal glands; and 1 remained well.

*Nonvirulent after three years five months.*—The bacilli when tested after three years five months of glycerination at  $-15^{\circ}$  C. failed to cause illness of two guinea pigs into which they were injected subcutaneously.

#### SUMMARY

A single strain of *Bacillus pestis* was subjected to four tests of duration of viability and virulence.

A. Pure undiluted neutral glycerin at  $-15^{\circ}$  C. was used for suspending the spleen of a plague guinea pig in one test, while a pure culture of *B. pestis* isolated from the same guinea pig was suspended in glycerin at  $-15^{\circ}$  C. in another test. The bacilli in the spleen were viable and fully virulent at the end of 7 years, while the glycerinated pure culture was fully virulent for 14 months, slightly virulent for 2 years, 7 months, and dead at the end of 3 years, 5 months.

B. A plain agar culture of *B. pestis* was stored at  $10^{\circ}$  C., sealed and unopened, for nine years in one test, while in another test a plain agar culture was subcultured every three months for nine years along with other cultures in a general collection of stock cultures stored at  $10^{\circ}$  C. The result at the end of nine years was viability and full virulence of the sealed culture, but viability and nonvirulence of the stock culture.

#### CONCLUSION

Pure undiluted neutral glycerin at  $-15^{\circ}$  C. was highly efficient for preserving for at least seven years the virulence of *B. pestis*, when protected by the protein substance of a guinea pig spleen. The combination of  $10^{\circ}$  C. and absence of transfer was also a highly efficient means of preserving the virulence of a culture of *B. pestis* on plain agar for at least nine years.

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## COURT DECISION RELATING TO PUBLIC HEALTH

*Labeling of soft drinks to indicate presence of saccharine.*—(New York Court of Appeals; *People ex rel Domingo v. French Bottling Works, Inc.*, 180 N. E., 537; decided Mar. 29, 1932.) The Greater New York Charter authorized the board of health of the city of New York to embrace in its sanitary code "all matters and subjects to which, and so far as, the power and authority of said department of health extends, not limiting their application to the subject of health only." Construing this, the court of appeals said that reasonable regulations to prevent adulteration and misbranding of food products were within the legitimate exercise of the powers thus granted, as being provisions for the security of health and life in the city of New York, and affirmed a conviction for violation of a provision of the sanitary code which required that the presence of "saccharine or other synthetic sweetening agent" in nonalcoholic carbonated beverages be indicated on the bottle or container or cap. The court, after quoting, with respect to saccharine, from several works, said:

Thus we have it that saccharine is a coal tar product, not to be used indiscriminately but only in small quantities. The presence of such sweetening in soft drinks might properly be required to be made known to the public by a proper label, if these definitions are correct.

While these definitions of saccharine are not conclusive on the fact, the people made out a *prima facie* case, and the burden of going on passed to defendant to meet the evidence against it. As it offered no evidence, the conviction was proper.

## DEATHS DURING WEEK ENDED MAY 21, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended May 21, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 21, 1932	Corresponding week, 1931
Policies in force.....	73, 132, 558	75, 141, 735
Number of death claims.....	13, 796	13, 527
Death claims per 1,000 policies in force, annual rate...	9. 9	9. 4
Death claims per 1,000 policies, first 20 weeks of year, annual rate.....	10. 5	10. 9

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 21, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended May 21, 1932				Corresponding week, 1931		Death rate <sup>1</sup> for the first 20 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	7, 969	11. 4	672	4 56	11. 7	643	12. 4	13. 4
Akron.....	50	9. 8	5	62	7. 9	2	7. 7	8. 4
Albany.....	43	17. 2	2	41	15. 8	2	14. 9	15. 3
Atlanta.....	69	12. 7	3	29	16. 3	8	14. 1	16. 0
White.....	36	10. 0	2	29	13. 0	4	11. 1	12. 8
Colored.....	33	18. 0	1	29	22. 9	4	19. 9	22. 4
Baltimore.....	197	12. 6	11	39	14. 9	20	14. 5	16. 5
White.....	146	11. 4	9	41	13. 6	12	13. 5	15. 1
Colored.....	51	17. 8	2	32	21. 0	8	19. 3	22. 9
Birmingham.....	67	12. 6	2	21	10. 3	4	12. 2	15. 0
White.....	33	10. 0	1	16	7. 2	0	9. 8	11. 6
Colored.....	34	16. 9	1	27	15. 2	4	15. 0	20. 5
Boston.....	210	13. 9	17	51	14. 9	25	15. 5	16. 0
Bridgeport.....	25	8. 9	2	36	11. 7	6	11. 6	12. 4
Buffalo.....	151	13. 4	16	77	11. 9	14	13. 9	14. 8
Cambridge.....	28	12. 8	4	83	14. 2	1	14. 3	13. 9
Camden.....	35	15. 4	7	123	11. 8	3	16. 0	16. 7
Canton.....	12	5. 8	2	50	8. 3	2	10. 0	11. 4
Chicago.....	708	10. 5	66	65	10. 8	63	10. 8	11. 6
Cincinnati.....	105	11. 9	10	64	12. 8	5	16. 8	17. 4
Cleveland.....	204	11. 6	12	39	9. 5	14	12. 0	12. 3
Columbus.....	88	15. 4	7	70	15. 5	7	14. 6	15. 1
Dallas.....	40	7. 4	7	-----	11. 3	6	11. 0	12. 4
White.....	34	7. 6	4	-----	10. 9	6	10. 0	11. 0
Colored.....	6	6. 4	1	-----	13. 2	0	15. 4	19. 1
Dayton.....	43	10. 8	1	14	14. 3	2	13. 2	13. 2
Denver.....	75	13. 3	4	39	13. 2	6	15. 6	15. 2
Des Moines.....	46	16. 5	8	137	9. 4	3	12. 6	11. 8
Detroit.....	241	7. 3	33	69	8. 0	32	8. 4	9. 5
Duluth.....	28	14. 4	2	58	9. 7	1	11. 0	11. 5
El Paso.....	32	15. 6	7	-----	15. 4	3	14. 3	17. 1
Erie.....	31	13. 6	5	106	12. 0	1	12. 3	11. 8
Evansville.....	23	11. 3	3	100	9. 5	2	10. 0	11. 8
Fall River.....	25	11. 3	5	133	14. 9	4	13. 2	13. 4
Flint.....	24	7. 4	2	29	7. 9	6	8. 5	8. 0
Fort Wayne.....	25	10. 8	2	52	5. 3	0	10. 7	11. 5
Fort Worth.....	26	8. 0	1	-----	10. 0	8	10. 5	12. 4
White.....	23	8. 4	0	-----	8. 9	3	10. 1	11. 8
Colored.....	3	5. 9	1	-----	15. 3	0	12. 5	15. 2
Grand Rapids.....	33	9. 9	5	85	7. 9	2	9. 6	9. 7
Hartford.....	43	13. 2	4	53	-----	-----	-----	-----
Houston.....	59	9. 5	5	-----	9. 1	5	11. 1	11. 5
White.....	41	9. 0	4	-----	8. 8	5	10. 4	10. 6
Colored.....	18	11. 0	1	-----	11. 3	0	13. 1	13. 9
Indianapolis.....	93	13. 0	9	73	13. 0	5	13. 6	14. 8
White.....	76	12. 1	7	64	12. 7	5	13. 2	14. 4
Colored.....	17	19. 3	2	137	15. 0	0	16. 6	18. 2

See footnotes at end of table.

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 21, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 21, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 20 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Jersey City.....	69	11.2	5	41	12.1	6	12.1	13.2
Kansas City, Kans. <sup>4</sup> .....	37	15.6	1	22	14.8	5	13.1	14.6
White.....	31	16.2	1	27	14.7	4	12.7	13.6
Colored.....	6	13.2	0	0	15.5	1	14.3	18.9
Kansas City, Mo.....	82	10.3	4	45	13.0	9	12.9	14.7
Knoxville <sup>5</sup> .....	34	15.9	3	76	13.4	1	13.0	14.1
White.....	25	14.0	3	84	14.3	1	11.8	13.2
Colored.....	9	25.7	0	0	8.8	0	19.1	18.9
Long Beach.....	19	6.2	1	26	10.9	0	9.6	10.3
Los Angeles.....	267	10.1	18	53	10.3	15	11.2	11.4
Louisville <sup>6</sup> .....	64	10.8	3	27	9.8	5	14.1	16.0
White.....	45	9.0	3	31	8.0	3	12.7	14.3
Colored.....	19	20.8	0	0	19.7	2	21.9	26.0
Lowell <sup>7</sup> .....	31	16.2	6	157	9.9	8	14.6	13.8
Lynn.....	23	11.7	2	57	6.6	0	11.7	11.5
Memphis <sup>8</sup> .....	83	16.5	10	109	17.5	7	16.8	17.5
White.....	48	15.4	6	102	12.7	3	13.2	14.3
Colored.....	35	18.2	4	120	25.3	4	22.7	22.6
Miami <sup>9</sup> .....	21	9.6	1	28	11.1	0	12.4	13.7
White.....	15	8.9	1	39	7.8	0	11.4	12.8
Colored.....	6	12.4	0	0	22.7	0	16.0	16.8
Milwaukee.....	108	9.4	10	48	9.4	9	9.6	10.3
Minneapolis.....	91	9.9	4	26	10.7	4	11.2	12.0
Nashville <sup>10</sup> .....	32	10.7	1	15	16.4	1	15.2	17.8
White.....	22	10.1	1	20	15.3	0	14.0	15.5
Colored.....	10	12.2	0	0	19.5	1	18.4	23.9
New Bedford <sup>11</sup> .....	21	9.8	2	58	17.6	7	12.8	13.8
New Haven.....	34	10.9	3	60	11.2	0	13.4	13.3
New Orleans <sup>12</sup> .....	110	12.1	10	57	15.3	12	15.6	18.3
White.....	65	10.1	7	61	12.4	3	13.3	14.9
Colored.....	45	17.1	3	49	22.5	9	21.4	26.7
New York.....	1,539	11.1	136	61	11.1	110	11.8	12.9
Bronx Borough.....	208	7.9	17	49	8.7	11	8.7	9.3
Brooklyn Borough.....	548	10.7	60	66	10.0	48	11.0	11.9
Manhattan Borough.....	870	16.8	43	61	16.7	39	18.1	19.7
Queens Borough.....	164	7.1	13	54	7.2	10	7.5	8.3
Richmond Borough.....	49	15.3	3	59	13.7	2	14.6	14.2
Newark, N. J.....	94	11.0	16	88	12.5	8	11.8	13.2
Oakland.....	52	9.1	3	38	10.5	4	11.1	11.3
Oklahoma City.....	35	8.9	2	27	15.4	5	10.7	12.5
Omaha.....	58	13.9	5	56	11.8	5	14.5	14.4
Paterson.....	29	10.9	1	18	12.0	5	13.6	15.5
Peoria.....	25	11.8	2	55	9.6	4	12.0	13.5
Philadelphia.....	456	12.0	33	51	13.4	37	13.8	15.5
Pittsburgh.....	142	10.9	21	96	12.7	10	14.3	17.1
Portland, Oreg.....	80	13.4	3	38	12.4	3	12.1	12.5
Providence.....	59	12.0	4	39	15.3	8	15.0	14.8
Richmond <sup>13</sup> .....	47	13.3	2	30	13.0	2	14.8	17.4
White.....	26	10.3	1	22	10.7	1	12.4	15.0
Colored.....	21	20.8	1	46	18.7	1	20.9	23.5
Rochester.....	82	12.8	7	67	10.7	9	13.1	13.5
St. Louis.....	205	12.9	10	36	12.6	15	14.7	17.2
St. Paul.....	47	8.8	3	32	11.5	6	11.8	11.6
Salt Lake City <sup>14</sup> .....	29	10.4	1	16	12.4	3	11.3	12.9
San Antonio.....	72	15.2	2	—	18.9	24	14.5	16.1
San Diego.....	38	12.2	8	43	12.0	0	15.6	14.8
San Francisco.....	147	11.6	7	48	11.8	4	13.2	14.0
Schenectady.....	23	12.5	2	58	13.0	0	11.9	11.8
Seattle.....	102	14.2	5	50	9.8	2	12.5	12.6
Somerville.....	19	9.3	3	80	8.9	1	10.1	11.1
South Bend.....	10	4.7	1	29	9.2	0	8.0	9.0
Spokane.....	29	13.0	1	27	9.4	0	12.5	12.8
Springfield, Mass.....	36	12.2	1	17	13.3	3	11.9	13.8
Syracuse.....	48	11.6	5	64	10.0	4	12.7	12.7
Tacoma.....	26	12.5	0	0	9.2	1	12.8	13.8
Tampa <sup>15</sup> .....	27	13.1	2	57	8.9	9	12.6	18.0
White.....	23	14.1	1	35	8.8	1	12.1	11.9
Colored.....	4	9.3	1	158	9.4	1	14.7	17.1

See footnotes at end of table.

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 21, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended May 21, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 20 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Toledo.....	64	11.1	4	43	11.4	5	12.5	13.0
Trenton.....	36	15.2	3	59	17.7	2	17.4	19.0
Utica.....	23	11.7	1	28	10.7	0	17.2	16.0
Washington, D. C. <sup>6</sup>	172	18.2	14	79	16.7	10	17.5	17.7
White.....	118	17.3	6	49	14.1	3	15.6	15.1
Colored.....	54	20.7	8	142	23.6	7	22.5	24.6
Waterbury.....	18	9.3	3	99	9.3	1	10.1	10.9
Wilmington, Del. <sup>7</sup>	23	11.3	1	23	17.6	3	16.9	16.3
Worcester.....	58	15.3	2	28	9.3	3	13.6	14.5
Yonkers.....	23	8.5	4	103	7.9	2	8.5	9.7
Youngstown.....	34	10.1	8	130	10.0	1	10.8	11.4

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 51 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 23; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 20; Tampa, 21, and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.



# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## THE UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended May 28, 1932, and May 30, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 28, 1932, and May 30, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931
<b>New England States:</b>								
Maine.....	1	4	1	6	253	17	0	1
New Hampshire.....	2	1			21	85	0	0
Vermont.....		1			269	42	0	0
Massachusetts.....	34	37	4	6	1,232	463	1	0
Rhode Island.....	3	4			43	123	0	0
Connecticut.....	6	3	3	2	273	435	0	0
<b>Middle Atlantic States:</b>								
New York.....	92	110	13	19	2,720	2,714	4	7
New Jersey.....	40	29	5	2	1,120	763	0	3
Pennsylvania.....	78	46			1,578	3,708	6	13
<b>East North Central States:</b>								
Ohio.....	15	38	5	25	808	1,396	0	5
Indiana.....	23	21	26	21	208	760	2	3
Illinois.....	51	175	32	9	821	2,317	2	19
Michigan.....	9	41	11	2	3,326	66	2	6
Wisconsin.....	9	5	14	22	1,617	781	2	3
<b>West North Central States:</b>								
Minnesota.....	6	10			46	167	2	1
Iowa.....	7	4			3		0	0
Missouri.....	23	30	8	3	78	365	0	5
North Dakota.....	6	6			115	31	0	3
South Dakota.....	4	11			8	33	1	0
Nebraska.....	13	4		3	1	1	1	2
Kansas.....	4	4	1	2	307	100	0	0
<b>South Atlantic States:</b>								
Delaware.....		2			2	91	0	0
Maryland.....	10	8	4	11	41	828	0	3
District of Columbia.....	3	10			18	202	1	2
Virginia.....								2
West Virginia.....	10	8	11	32	436	160	3	0
North Carolina.....	12	6	25	2	703	683	3	4
South Carolina.....	6	17	355	289	134	115	0	5
Georgia.....	9	2	92	37	95	145	0	2
Florida.....	3	3	1	2	3	191	0	0

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended May 28, 1932, 17 cases: 1 case in Virginia, 5 cases in Georgia, 4 cases in Alabama, and 7 cases in Texas.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 28, 1932, and May 30, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931
<b>East South Central States:</b>								
Kentucky.....	4	—	24	—	63	93	1	3
Tennessee.....	6	4	52	10	11	116	4	0
Alabama <sup>1</sup> .....	7	8	13	17	6	159	3	1
Mississippi.....	5	8	—	—	—	—	1	0
<b>West South Central States:</b>								
Arkansas.....	1	—	1	9	—	30	0	0
Louisiana.....	35	21	4	25	8	2	2	3
Oklahoma <sup>2</sup> .....	9	7	8	31	14	42	0	1
Texas <sup>3</sup> .....	16	16	13	20	30	72	0	0
<b>Mountain States:</b>								
Montana.....	—	—	3	—	56	6	0	2
Idaho.....	3	—	2	—	1	4	0	1
Wyoming.....	1	—	—	1	37	2	0	0
Colorado.....	5	6	—	—	68	137	1	0
New Mexico.....	5	5	—	—	25	58	0	0
Arizona.....	2	3	2	1	—	13	1	0
Utah <sup>4</sup> .....	—	—	—	1	—	2	1	2
<b>Pacific States:</b>								
Washington.....	9	1	—	—	232	281	0	1
Oregon.....	2	3	19	10	210	53	2	0
California.....	57	43	40	33	550	899	1	0
<b>Total.....</b>	<b>646</b>	<b>765</b>	<b>787</b>	<b>643</b>	<b>17,590</b>	<b>18,751</b>	<b>47</b>	<b>102</b>

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931
<b>New England States:</b>								
Maine.....	0	0	21	27	0	0	2	4
New Hampshire.....	0	0	22	1	0	0	0	0
Vermont.....	0	0	6	3	0	1	0	0
Massachusetts.....	1	1	469	240	0	0	4	3
Rhode Island.....	0	0	45	36	0	0	0	0
Connecticut.....	0	0	127	35	0	0	2	1
<b>Middle Atlantic States:</b>								
New York.....	4	4	1,322	585	0	9	6	21
New Jersey.....	2	0	326	231	0	0	1	2
Pennsylvania.....	2	0	649	679	0	0	8	7
<b>East North Central States:</b>								
Ohio.....	0	2	143	516	8	58	3	7
Indiana.....	0	0	51	131	10	98	2	1
Illinois.....	2	1	294	669	7	74	11	11
Michigan.....	1	0	431	449	9	11	6	1
Wisconsin.....	1	1	66	93	1	80	2	1
<b>West North Central States:</b>								
Minnesota.....	0	2	103	77	4	7	1	0
Iowa.....	0	0	34	38	16	69	4	1
Missouri.....	0	1	41	143	1	34	0	4
North Dakota.....	2	0	4	17	3	0	0	1
South Dakota.....	1	0	6	9	1	9	0	1
Nebraska.....	0	0	11	18	15	46	1	1
Kansas.....	0	0	31	23	5	49	6	2

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 28, 1932, 17 cases: 1 case in Virginia, 5 cases in Georgia, 4 cases in Alabama, and 7 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 28, 1932, and May 30, 1931—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931	Week ended May 28, 1932	Week ended May 30, 1931
<b>South Atlantic States:</b>								
Delaware.....	0	0	18	12	0	0	1	2
Maryland <sup>1</sup> .....	0	0	80	65	0	0	8	9
District of Columbia.....	0	0	17	25	0	0	0	0
Virginia <sup>1</sup> .....	0	0	32	23	0	3	5	1
West Virginia.....	1	1	23	30	5	4	8	5
North Carolina.....	1	0	3	5	1	0	12	19
South Carolina.....	2	0	8	55	0	0	37	19
Georgia <sup>1</sup> .....	0	0	2	2	1	0	4	3
Florida.....	0	0	38	20	7	7	8	6
<b>East South Central States:</b>								
Kentucky.....	1	0	7	13	7	0	14	2
Tennessee.....	0	0	4	23	13	2	5	13
Alabama <sup>1</sup> .....	1	3	5	9	11	34	8	10
Mississippi.....	0	0	1	10	6	23	3	5
<b>West South Central States:</b>								
Arkansas.....	0	3	13	15	6	19	20	17
Louisiana.....	1	0	3	11	33	44	0	6
Oklahoma <sup>1</sup> .....	1	0	14	28	31	27	6	0
Texas <sup>1</sup> .....	1	0	21	14	2	2	0	1
<b>Mountain States:</b>								
Montana.....	0	0	1	2	0	0	0	1
Idaho.....	0	0	2	15	1	0	1	0
Wyoming.....	0	0	19	28	1	0	5	1
Colorado.....	0	0	8	3	1	1	2	1
New Mexico.....	0	0	4	4	0	0	0	3
Arizona.....	0	0	8	3	0	0	0	0
Utah <sup>1</sup> .....	0	0	22	20	6	16	4	3
<b>Pacific States:</b>								
Washington.....	0	0	6	13	6	18	1	0
Oregon.....	1	3	152	103	20	7	26	6
California.....	26	23	4,713	4,571	232	752	237	298

<sup>1</sup> Week ended Friday.

<sup>2</sup> Typhus fever, week ended May 28, 1932, 17 cases: 1 case in Virginia, 5 cases in Georgia, 4 cases in Alabama, and 7 cases in Texas.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa.

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Cerebro-spinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
<i>April, 1932</i>										
Arkansas.....	7	12	487	21	10	63	0	19	46	9
Colorado.....	6	29	1	1	664	—	0	152	5	5
Nevada.....	2	—	2	—	50	—	0	8	1	1
North Carolina.....	2	69	812	—	2,505	96	3	256	11	18
Oklahoma <sup>1</sup> .....	6	59	799	35	157	21	0	81	55	25
Oregon.....	2	9	288	2	1,434	—	0	81	72	13
South Carolina.....	—	108	8,957	796	695	836	2	35	3	31
South Dakota.....	1	19	7	—	36	—	1	18	7	8
Virginia.....	11	86	5,509	18	434	50	0	240	8	28
Washington.....	2	21	94	—	1,608	—	1	148	106	6

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

April, 1932			
	Cases		Cases
<b>Botulism:</b>		<b>Puerperal septicemia:</b>	
Washington.....	1	Washington.....	1
<b>Chicken pox:</b>		<b>Rabies in animals:</b>	
Arkansas.....	70	South Carolina.....	15
Colorado.....	463	<b>Rocky Mountain spotted or tick fever:</b>	
Nevada.....	23	Colorado.....	8
North Carolina.....	505	Nevada.....	2
Oklahoma <sup>1</sup> .....	78	Oregon.....	12
Oregon.....	181	South Dakota.....	1
South Carolina.....	167	<b>Scabies:</b>	
South Dakota.....	20	Oregon.....	50
Virginia.....	553	<b>Septic sore throat:</b>	
Washington.....	269	North Carolina.....	10
<b>Conjunctivitis:</b>		Oklahoma <sup>1</sup> .....	26
Oklahoma <sup>1</sup> .....	2	Oregon.....	3
<b>Dengue:</b>		South Carolina.....	6
South Carolina.....	10	<b>Tetanus:</b>	
<b>Diarrhea:</b>		Oklahoma <sup>1</sup> .....	1
South Carolina.....	539	South Carolina.....	2
<b>Dysentery:</b>		<b>Trachoma</b>	
Oklahoma <sup>1</sup> .....	6	Arkansas.....	5
Virginia.....	152	Oklahoma <sup>1</sup> .....	12
<b>German measles:</b>		Oregon.....	1
Colorado.....	2	South Dakota.....	1
North Carolina.....	97	<b>Tularemia:</b>	
Washington.....	85	South Carolina.....	2
<b>Hookworm disease:</b>		Virginia.....	1
South Carolina.....	105	<b>Typhus fever:</b>	
<b>Impetigo contagiosa:</b>		North Carolina.....	1
Colorado.....	12	South Carolina.....	1
Oregon.....	57	<b>Undulant fever:</b>	
Washington.....	1	Oklahoma <sup>1</sup> .....	2
<b>Jaundice:</b>		South Dakota.....	1
Colorado.....	3	Washington.....	1
<b>Lethargic encephalitis:</b>		<b>Vincent's angina:</b>	
Colorado.....	1	Colorado.....	8
Oregon.....	1	Oklahoma <sup>1</sup> .....	2
Washington.....	2	Oregon.....	10
<b>Mumps:</b>		Washington.....	3
Arkansas.....	54	<b>Whooping cough:</b>	
Colorado.....	602	Arkansas.....	53
Oklahoma <sup>1</sup> .....	53	Colorado.....	212
Oregon.....	157	Nevada.....	40
South Carolina.....	314	North Carolina.....	1,601
South Dakota.....	26	Oklahoma <sup>1</sup> .....	122
Washington.....	76	Oregon.....	181
<b>Ophthalmia neonatorum:</b>		South Carolina.....	141
North Carolina.....	3	South Dakota.....	138
South Carolina.....	22	Virginia.....	1,610
South Dakota.....	2	Washington.....	155
Washington.....	1		
<b>Paratyphoid fever:</b>			
Arkansas.....	8		
South Carolina.....	5		

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

# **ADMISSIONS TO HOSPITALS FOR THE INSANE, OCTOBER, 1930**

Reports for the month of October, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 113 hospitals, located in 36 States, the District of Columbia, and the Territory of Hawaii. The 113 hospitals had 169,160 patients on October 31, 1930, 90,363 males and 78,797 females, the ratio being 115 males per 100 females.

The following table gives the number of new admissions for the month of October, 1930:

Psychoses	Male	Female	Total
1. Traumatic psychoses.....	18	0	18
2. Senile psychoses.....	150	133	283
3. Psychoses with cerebral arteriosclerosis.....	169	122	291
4. General paralysis.....	208	68	276
5. Psychoses with cerebral syphilis.....	17	10	27
6. Psychoses with Huntington's chorea.....	2	0	2
7. Psychoses with brain tumor.....	1	0	1
8. Psychoses with other brain or nervous disease.....	17	18	35
9. Alcoholic psychoses.....	146	19	165
10. Psychoses due to drugs and other exogenous toxins.....	11	12	23
11. Psychoses with pellagra.....	5	12	17
12. Psychoses with other somatic diseases.....	25	37	62
13. Manic-depressive psychoses.....	152	259	411
14. Involution melancholia.....	20	37	57
15. Dementia præcox (schizophrenia).....	294	264	558
16. Paranoia and paranoid conditions.....	25	29	54
17. Epileptic psychoses.....	43	22	65
18. Psychoneuroses and neuroses.....	27	50	77
19. Psychoses with psychopathic personality.....	33	11	44
20. Psychoses with mental deficiency.....	63	57	120
21. Undiagnosed psychoses.....	99	69	168
22. Without psychosis.....	191	55	249
Total.....	1,710	1,287	2,997

During the month of October, 1930, there were 2,997 new admissions to these hospitals, 57.1 per cent of the new admissions being males and 42.9 per cent females, the ratio being 133 males per 100 females. Four hundred and seventeen of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,580 new admissions for whom provisional diagnoses were made. Of these 2,580 patients, cases of dementia præcox constituted 21.8 per cent; manic-depressive psychoses, 15.9 per cent; senile psychoses, 11 per cent; psychoses with cerebral arteriosclerosis, 10.9 per cent; and general paralysis, 10.7 per cent. These five classes accounted for 70.3 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on October 31, 1930:

	Patients on books		
	Male	Female	Total
Patients on books last day of month:			
In hospitals.....	82,245	71,916	154,161
On parole or otherwise absent, but still on books.....	8,115	6,881	14,996
Total.....	90,363	78,797	169,160

Of the 169,160 patients, 8,115 males and 6,881 females were on parole or otherwise absent but still on the books at the end of the month, 9.0 per cent of the males, 8.7 per cent of the females, and 8.9 per cent of the total number of patients.

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 34,025,000. The estimated population of the 90 cities reporting deaths is more than 32,470,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended May 21, 1932, and May 23, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	741	791	
97 cities.....	253	399	702
Measles:			
45 States.....	20,161	20,080	
97 cities.....	7,299	8,811	
Meningococcus meningitis:			
46 States.....	65	122	
97 cities.....	24	70	
Poliomyelitis:			
46 States.....	15	19	
Scarlet fever:			
46 States.....	5,523	4,727	
97 cities.....	2,497	2,357	1,355
Smallpox:			
46 States.....	206	755	
97 cities.....	39	100	60
Typhoid fever:			
46 States.....	196	170	
97 cities.....	49	41	34
<i>Deaths reported</i>			
Influenza and pneumonia:			
90 cities.....	644	619	
Smallpox:			
90 cities.....	0	0	

## City reports for week ended May 21, 1932

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	1	0	0		0	1	3	1
New Hampshire:								
Concord	0	0	0		0	6	0	1
Manchester	0	0	0		0	0	0	0
Nashua	0	1	1		0	0	0	0
Vermont:								
Barre	1	0	0		0	0	5	0
Burlington	1	0	0		0	1	3	0
Massachusetts:								
Boston	38	25	13	2	0	109	73	23
Fall River	4	2	2		0	57	0	4
Springfield	10	2	0		0	159	13	3
Worcester	13	3	1		0	9	4	6
Rhode Island:								
Pawtucket	0	1	0		0	0	0	4
Providence	3	5	1		0	29	1	3
Connecticut:								
Bridgeport	3	4	0		0	25	0	0
Hartford	2	3	0	2	0	2	13	6
New Haven	7	1	0	1	0	0	12	1
MIDDLE ATLANTIC								
New York:								
Buffalo	18	9	1		0	60	3	12
New York	279	233	19	12	13	570	219	172
Rochester	6	3	2		0	22	22	4
Syracuse	3	1	0		0	311	21	2
New Jersey:								
Camden	3	7	1		1	0	3	0
Newark	44	13	4	2	0	60	200	9
Trenton	9	2	1		0	2	0	3
Pennsylvania:								
Philadelphia	97	55	2	1	1	14	92	25
Pittsburgh	59	16	2	2	1	165	21	26
Reading	16	1	0		0	3	1	0
Scranton	1		0		0	6	1	0
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	11	4	0		1	5	0	6
Cleveland	121	20	6	15	0	570	91	17
Columbus	17	3	2	1	1	55	3	5
Toledo	46	3	1	2	2	80	0	3
Indiana:								
Fort Wayne	1	1	2		0	0	0	0
Indianapolis	54	2	3		0	27	168	15
South Bend	8	0	0		1	4	0	0
Terre Haute	1	0	0		0	23	0	1
Illinois:								
Chicago	142	77	35	8	3	667	14	50
Springfield	11	0	0		0	0	7	1
Michigan:								
Detroit	2	39	7	3	3	1,340	79	26
Flint	19	2	0	6	0	141	55	5
Grand Rapids	4	1	0		0	43	24	4
Wisconsin:								
Kenosha	2	0	3		0	190	1	0
Madison	6	2	0		0	2	0	
Milwaukee	88	10	2		0	1,271	22	9
Racine	13	0	1		0	239	17	1
Superior	2	0	0		0	3	19	1

## City reports for week ended May 21, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	8	0	0	-----	2	0	0	3
Minneapolis.....	17	10	2	-----	0	10	42	8
St. Paul.....	17	8	0	-----	2	9	22	2
Iowa:								
Davenport.....	1	0	0	-----	-----	0	-----	-----
Des Moines.....	0	1	2	-----	-----	0	0	-----
Sioux City.....	16	0	0	-----	-----	0	4	-----
Waterloo.....	2	1	0	-----	-----	0	1	-----
Missouri:								
Kansas City.....	24	3	4	-----	1	10	49	11
St. Joseph.....	2	0	2	-----	0	0	2	4
St. Louis.....	29	32	21	-----	-----	18	6	4
North Dakota:								
Fargo.....	28	0	0	-----	1	14	0	1
Grand Forks.....	0	0	0	-----	-----	9	0	-----
South Dakota:								
Aberdeen.....	1	0	0	-----	-----	6	0	-----
Nebraska:								
Omaha.....	30	2	14	-----	0	3	14	0
Kansas:								
Topeka.....	49	1	0	-----	0	5	4	0
Wichita.....	9	1	1	-----	0	30	5	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	1	-----	0	0	2	2
Maryland:								
Baltimore.....	114	17	7	2	1	4	151	19
Cumberland.....	0	0	0	-----	0	31	0	1
Frederick.....	0	0	0	-----	0	3	0	0
District of Columbia:								
Washington.....	45	9	5	-----	0	18	0	14
Virginia:								
Lynchburg.....	15	0	0	-----	0	5	0	0
Norfolk.....	1	0	1	-----	0	8	10	2
Richmond.....	2	2	0	-----	0	0	0	0
Roanoke.....	4	0	0	-----	1	0	0	1
West Virginia:								
Charleston.....	0	1	0	1	0	23	0	1
Huntington.....	1	-----	0	-----	0	8	0	0
Wheeling.....	1	0	0	-----	0	44	0	1
North Carolina:								
Raleigh.....	6	0	0	-----	0	2	0	0
Wilmington.....	3	0	0	-----	1	0	0	1
Winston-Salem.....	4	0	1	-----	0	33	7	3
South Carolina:								
Charleston.....	1	0	1	34	0	0	0	2
Columbia.....	9	0	0	-----	0	83	0	0
Greenville.....	0	0	0	-----	0	37	0	0
Georgia:								
Atlanta.....	0	1	2	4	0	7	0	6
Brunswick.....	0	0	0	-----	0	0	0	0
Savannah.....	0	0	0	61	0	1	0	1
Florida:								
Miami.....	6	1	0	-----	0	0	0	1
Tampa.....	0	0	0	-----	0	0	0	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	0	0	0	-----	1	0	0	0
Tennessee:								
Memphis.....	9	1	0	-----	0	-----	0	4
Nashville.....	4	0	1	-----	0	0	0	2
Alabama:								
Birmingham.....	5	1	1	2	0	1	2	5
Mobile.....	2	0	0	-----	0	0	0	1
Montgomery.....	0	0	0	-----	-----	0	0	-----



## City reports for week ended May 21, 1933—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	-----	-----	0	0	-----
Little Rock.....	1	0	0	-----	0	0	0	1
Louisiana:								
New Orleans.....	1	9	13	2	2	0	0	5
Shreveport.....	3	0	1	-----	0	5	9	2
Oklahoma:								
Muskogee.....	0	-----	0	-----	0	0	1	-----
Oklahoma City..	10	1	0	14	0	15	0	4
Texas:								
Dallas.....	2	3	8	1	1	-----	0	2
Fort Worth.....	15	3	2	-----	0	1	0	3
Galveston.....	0	0	3	-----	0	0	0	2
Houston.....	0	3	4	-----	0	9	0	4
San Antonio.....	0	2	0	-----	3	0	0	7
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	0	0	0
Great Falls.....	0	0	0	-----	0	2	0	2
Helena.....	5	0	0	-----	0	1	0	0
Missoula.....	0	0	0	-----	0	0	0	2
Idaho:								
Boise.....	-----	0	-----	-----	-----	-----	-----	-----
Colorado:								
Denver.....	114	6	5	-----	0	92	47	6
Pueblo.....	11	0	0	-----	0	0	0	1
New Mexico:								
Albuquerque.....	3	0	0	1	0	17	2	1
Arizona:								
Phoenix.....	1	0	1	-----	0	0	0	2
Utah:								
Salt Lake City...	108	2	1	-----	0	0	8	4
Nevada:								
Reno.....	0	0	0	-----	0	0	0	0
PACIFIC								
Washington:								
Seattle.....	5	2	3	-----	-----	43	7	-----
Spokane.....	21	1	0	-----	-----	4	0	-----
Tacoma.....	6	1	0	-----	0	55	8	1
Oregon:								
Portland.....	1	4	2	-----	1	125	10	6
Salem.....	1	0	3	1	-----	1	5	-----
California:								
Los Angeles.....	139	27	37	43	0	17	20	8
Sacramento.....	34	0	4	-----	0	15	2	5
San Francisco.....	59	11	1	2	0	215	12	6

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis,	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	deaths re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
<b>NEW ENGLAND</b>											
Maine:											
Portland.....	3	3	0	0	0	1	0	1	0	7	21
New Hampshire:											
Concord.....	0	9	0	0	0	0	0	0	0	0	9
Manchester.....	1	0	0	0	0	0	0	0	0	0	20
Nashua.....	0	0	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	0	8
Burlington.....	0	0	0	0	0	0	0	0	0	6	8
Massachusetts:											
Boston.....	74	147	0	0	0	7	2	1	0	35	210
Fall River.....	4	13	0	0	0	1	0	0	0	0	25
Springfield.....	9	6	0	0	0	1	0	0	0	6	35
Worcester.....	11	44	0	0	0	0	0	1	0	23	58
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	20
Providence.....	13	35	0	0	0	2	0	0	0	8	59
Connecticut:											
Bridgeport.....	8	7	0	0	0	0	0	0	0	1	25
Hartford.....	5	5	0	0	0	1	0	1	1	9	41
New Haven.....	5	20	0	0	0	0	0	0	0	6	34
<b>MIDDLE ATLANTIC</b>											
New York:											
Buffalo.....	24	66	0	1	0	13	1	0	0	20	150
New York.....	266	803	0	0	0	105	8	11	3	141	1,539
Rochester.....	11	54	0	0	0	3	1	0	1	5	80
Syracuse.....	10	30	0	0	0	1	0	0	0	91	48
New Jersey:											
Camden.....	5	31	0	0	0	0	0	0	0	6	35
Newark.....	27	28	0	0	0	8	0	0	0	26	97
Trenton.....	3	9	0	0	0	4	0	0	0	3	36
Pennsylvania:											
Philadelphia.....	101	185	0	0	0	30	2	0	1	106	456
Pittsburgh.....	32	62	0	0	0	4	0	0	0	29	142
Reading.....	4	21	0	0	0	1	0	0	0	14	27
Scranton.....	-----	20	-----	0	0	0	-----	0	0	4	-----
<b>EAST NORTH CENTRAL</b>											
Ohio:											
Cincinnati.....	21	53	2	0	0	8	0	0	0	6	105
Cleveland.....	44	89	0	0	0	14	2	0	0	112	204
Columbus.....	8	7	2	5	0	6	0	0	0	72	88
Toledo.....	11	3	0	0	0	8	0	0	0	50	64
Indiana:											
Fort Wayne.....	4	0	1	0	0	1	0	0	0	0	25
Indianapolis.....	16	10	7	0	0	7	0	0	0	35	-----
South Bend.....	4	2	0	0	0	1	0	0	0	3	10
Terre Haute.....	3	0	0	0	0	0	0	0	0	0	15
Illinois:											
Chicago.....	124	166	2	0	0	51	2	0	0	77	708
Springfield.....	4	1	0	0	0	0	1	1	0	8	34
Michigan:											
Detroit.....	117	248</									

## City reports for week ended May 31, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	0	0	0	0	1	0	0	1	0	28
Minneapolis.....	27	40	1	0	0	3	0	0	0	20	91
St. Paul.....	19	11	0	0	0	3	0	1	0	36	51
Iowa:											
Davenport.....	1	5	5	0	-----	-----	0	0	-----	0	-----
Des Moines.....	6	12	2	1	-----	-----	0	0	-----	0	46
Sioux City.....	2	3	0	3	-----	-----	0	0	-----	1	-----
Waterloo.....	1	1	1	0	-----	-----	0	0	-----	0	-----
Missouri:											
Kansas City.....	16	9	1	0	0	8	1	1	0	15	82
St. Joseph.....	4	1	0	0	0	1	0	0	0	3	22
St. Louis.....	62	16	2	0	0	9	1	3	0	21	205
North Dakota:											
Fargo.....	0	1	0	0	0	0	0	0	0	0	10
Grand Forks.....	1	0	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	0	1	0	0	-----	-----	0	0	-----	0	-----
Nebraska:											
Omaha.....	5	18	5	9	0	0	0	0	0	5	58
Kansas:											
Topeka.....	2	0	0	0	0	2	0	0	0	22	12
Wichita.....	4	0	1	0	0	0	0	0	0	2	24
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	4	7	0	0	0	0	0	0	0	5	23
Maryland:											
Baltimore.....	39	49	0	0	0	15	1	2	0	104	197
Cumberland.....	0	0	0	0	0	0	0	0	0	0	14
Frederick.....	0	0	0	0	0	0	0	0	0	0	3
Dist. of Columbia:											
Washington.....	22	20	1	0	0	13	0	1	0	8	172
Virginia:											
Lynchburg.....	0	1	0	0	0	0	1	0	0	24	12
Norfolk.....	1	0	0	0	0	0	0	0	0	22	22
Richmond.....	4	6	0	9	0	3	0	0	0	0	42
Roanoke.....	0	3	0	0	0	1	0	0	0	1	18
West Virginia:											
Charleston.....	1	4	0	0	0	0	0	0	0	1	15
Huntington.....	-----	2	-----	0	0	0	-----	1	0	3	-----
Wheeling.....	0	0	0	0	0	0	0	1	0	7	15
North Carolina:											
Raleigh.....	0	0	0	0	0	1	0	0	0	3	13
Wilmington.....	0	0	0	0	0	1	0	0	0	14	10
Winston-Salem.....	0	12	0	0	0	1	0	0	0	31	11
South Carolina:											
Charleston.....	0	0	0	0	0	2	0	2	1	0	29
Columbia.....	0	0	0	0	0	1	1	0	0	6	6
Greenville.....	0	0	0	0	0	0	0	0	0	0	-----
Georgia:											
Atlanta.....	4	2	3	0	0	6	0	0	0	4	60
Brunswick.....	0	0	0	0	0	0	0	2	0	0	7
Savannah.....	0	2	0	0	0	3	0	5	0	1	42
Florida:											
Miami.....	1	1	0	0	0	1	0	0	0	0	21
Tampa.....	1	0	0	0	0	3	1	0	0	0	29
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	2	0	0	0	0	0	0	0	0	0	19
Tennessee:											
Memphis.....	3	0	1	0	0	3	1	0	0	42	33
Nashville.....	2	1	1	1	0	1	0	0	0	7	32
Alabama:											
Birmingham.....	0	1	1	0	0	3	0	0	0	4	67
Mobile.....	0	0	0	5	0	0	0	1	0	0	13
Montgomery.....	0	1	0	0	-----	-----	1	0	-----	0	-----

## City reports for week ended May 21, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0	—	—	0	0	—	1	—
Little Rock.....	1	0	0	1	0	3	0	0	0	3	4
Louisiana:											
New Orleans.....	10	11	1	0	0	12	2	1	1	1	110
Shreveport.....	1	0	0	0	0	3	0	1	0	6	40
Oklahoma:											
Muskogee.....	—	0	—	1	—	—	—	0	—	0	—
Oklahoma City.....	2	6	2	1	0	8	0	0	0	14	35
Texas:											
Dallas.....	3	1	1	5	0	3	0	0	0	11	40
Fort Worth.....	2	8	5	6	0	3	0	0	0	0	26
Galveston.....	0	1	0	0	0	2	0	0	0	0	15
Houston.....	2	2	2	0	0	6	1	1	0	0	58
San Antonio.....	0	0	1	0	0	9	0	0	0	0	72
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	8
Great Falls.....	1	0	0	0	0	0	0	0	0	0	12
Helena.....	0	0	0	0	0	0	0	0	0	0	8
Missoula.....	0	1	1	0	0	0	0	0	0	0	8
Idaho:											
Boise.....	0	—	0	—	—	—	0	—	—	—	—
Colorado:											
Denver.....	12	16	0	0	0	4	0	0	0	23	70
Pueblo.....	1	0	0	0	0	0	0	0	0	4	7
New Mexico:											
Albuquerque.....	0	0	0	0	0	2	0	1	0	0	8
Arizona:											
Phoenix.....	1	0	0	0	0	1	0	0	0	0	—
Utah:											
Salt Lake City.....	8	0	0	0	0	0	0	1	0	15	29
Nevada:											
Reno.....	0	0	1	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	8	8	2	1	—	—	1	0	—	1	—
Spokane.....	3	0	6	1	—	—	0	0	—	7	—
Tacoma.....	8	2	3	2	0	0	0	0	0	0	26
Oregon:											
Portland.....	4	3	3	3	0	4	0	0	0	2	80
Salem.....	0	0	1	1	—	—	—	0	—	1	—
California:											
Los Angeles.....	30	72	6	2	0	23	1	0	0	74	267
Sacramento.....	2	0	0	0	0	8	0	1	0	0	35
San Francisco.....	20	8	1	3	0	13	1	4	1	16	147

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	
<b>NEW ENGLAND</b>										
Massachusetts:										
Boston.....	1	1	0	0	2	0	0	0	0	0
Worcester.....	0	0	0	0	1	0	0	0	0	0
Rhode Island:										
Providence.....	0	0	1	0	0	0	0	0	0	0

## City reports for week ended May 21, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
New York <sup>1</sup> .....	3	2	3	0	0	0	1	1	0
New Jersey:									
Trenton.....	0	0	0	0	0	0	0	1	1
Pennsylvania:									
Philadelphia.....	1	0	0	0	0	0	0	1	0
Pittsburgh.....	3	2	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Indiana:									
Indianapolis.....	3	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	4	0	0	0	0	0	0	0	0
Michigan:									
Detroit.....	1	0	0	0	0	0	0	1	0
Flint.....	1	0	0	0	0	0	0	0	0
Wisconsin:									
Racine.....	1	1	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	1	1	0	0	0	0	0	0	0
St. Paul.....	0	0	<sup>1</sup> 1	<sup>1</sup> 1	0	0	0	0	0
Missouri:									
St. Louis.....	1	1	0	0	0	0	0	0	0
North Dakota:									
Fargo.....	0	0	0	1	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	2	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	0	1	0	0	0	0	0	0	0
Virginia:									
Norfolk.....	0	0	0	0	0	1	0	0	0
Richmond.....	0	0	0	0	0	1	0	0	0
West Virginia:									
Wheeling.....	1	0	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	2	1	0	1	0
Columbia.....	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta.....	0	0	1	1	0	0	0	0	0
Savannah.....	0	0	0	0	0	0	0	2	1
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	0	0	0	2	4	0	0	0
Texas:									
Fort Worth.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
Arizona:									
Phoenix.....	0	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
California:									
Los Angeles.....	0	0	0	0	2	0	0	1	0

<sup>1</sup> Typhus fever, 1 case at New York City, N. Y.<sup>2</sup> Nonresident.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 21, 1932, compared with those for a like period ended May 23, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, April 17 to May 21, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931
98 cities.....	51	53	43	63	49	67	44	63	39	62
New England.....	26	58	21	26	34	38	48	38	41	48
Middle Atlantic.....	55	46	52	61	48	61	42	58	14	63
East North Central.....	41	58	33	84	33	82	32	72	36	67
West North Central.....	57	67	56	57	53	71	55	71	83	75
South Atlantic.....	39	51	43	69	45	63	29	55	83	38
East South Central.....	17	23	19	6	46	41	40	18	12	12
West South Central.....	102	71	79	68	89	108	92	81	96	81
Mountain.....	86	26	35	26	9	27	26	61	54	61
Pacific.....	59	63	15	53	97	61	69	74	86	73

## MEASLES CASE RATES

98 cities.....	1, 017	1, 342	1, 200	1, 250	1, 226	1, 305	1, 157	1, 403	1, 121	1, 373
New England.....	851	1, 286	1, 818	964	1, 002	1, 063	1, 196	1, 166	951	1, 190
Middle Atlantic.....	579	1, 419	456	1, 411	478	1, 434	487	1, 486	534	1, 479
East North Central.....	2, 680	1, 073	2, 821	896	3, 317	1, 101	2, 962	1, 311	2, 908	1, 457
West North Central.....	491	880	421	777	243	1, 016	254	1, 397	188	1, 098
South Atlantic.....	839	4, 065	663	3, 877	429	3, 559	569	3, 371	498	2, 845
East South Central.....	12	1, 615	6	1, 439	0	1, 275	12	1, 245	6	1, 245
West South Central.....	26	139	43	156	40	152	30	166	46	271
Mountain.....	1, 043	661	106	661	810	555	1, 069	531	649	618
Pacific.....	916	517	1, 713	506	883	502	763	555	664	457

## SCARLET FEVER CASE RATES

98 cities.....	455	406	513	372	444	390	437	389	384	368
New England.....	678	575	971	582	678	630	647	666	693	536
Middle Atlantic.....	721	488	750	409	706	448	709	439	570	442
East North Central.....	369	431	436	402	897	438	385	453	354	412
West North Central.....	252	469	220	480	182	440	195	383	188	341
South Atlantic.....	314	305	369	273	265	277	243	243	208	241
East South Central.....	87	399	50	411	52	253	17	341	17	304
West South Central.....	46	98	43	132	43	105	23	108	49	85
Mountain.....	190	191	89	191	155	170	147	157	152	270
Pacific.....	171	86	77	94	145	106	135	123	162	88

## SMALLPOX CASE RATES

98 cities.....	8	21	5	23	8	15	5	17	6	16
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	1	0	1	0	3	0	1	0	4
East North Central.....	2	20	8	10	0	6	4	23	3	15
West North Central.....	15	71	9	118	12	78	21	75	23	67
South Atlantic.....	0	6	0	6	0	8	0	6	0	6
East South Central.....	110	35	62	59	64	41	17	12	35	41
West South Central.....	3	96	0	102	7	64	7	41	30	47
Mountain.....	86	17	0	0	138	9	17	17	0	9
Pacific.....	23	41	31	51	25	12	11	25	17	12

See footnotes at end of table.

Summary of weekly reports from cities, April 17 to May 21, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued

## TYPHOID FEVER CASE RATES

	Week ended—									
	Apr. 23, 1932	Apr. 25, 1931	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931
96 cities.....	5	3	17	6	5	5	6	5	18	6
New England.....	0	2	12	7	0	5	12	5	10	2
Middle Atlantic.....	5	4	5	7	6	5	4	5	5	5
East North Central.....	1	2	3	4	3	2	2	2	4	6
West North Central.....	2	4	5	4	0	2	9	6	9	10
South Atlantic.....	12	2	18	14	10	8	8	12	25	12
East South Central.....	5	6	12	12	17	6	0	18	6	18
West South Central.....	23	0	26	0	10	0	16	7	10	7
Mountain.....	9	9	9	0	0	10	9	0	19	0
Pacific.....	6	4	11	6	0	8	4	0	10	8

## INFLUENZA DEATH RATES

91 cities.....	18	13	14	11	10	12	9	8	17	7
New England.....	12	7	9	7	2	5	7	2	0	8
Middle Atlantic.....	18	12	8	12	8	11	0	7	7	8
East North Central.....	13	6	13	5	5	11	8	5	5	8
West North Central.....	20	18	16	12	12	6	6	9	20	8
South Atlantic.....	29	10	27	20	24	22	8	16	6	4
East South Central.....	38	45	14	19	50	51	44	51	6	19
West South Central.....	30	55	40	38	10	14	7	7	24	28
Mountain.....	9	17	53	26	34	27	9	9	10	26
Pacific.....	9	5	6	2	5	7	7	7	0	0

## PNEUMONIA DEATH RATES

91 cities.....	107	138	107	122	106	117	103	102	97	96
New England.....	146	122	187	154	129	130	98	113	126	72
Middle Atlantic.....	128	165	110	141	120	144	130	121	109	121
East North Central.....	72	98	78	76	91	87	91	73	86	68
West North Central.....	143	230	130	180	70	121	102	109	105	97
South Atlantic.....	118	168	141	180	131	131	120	137	102	111
East South Central.....	112	127	160	121	75	121	63	127	75	121
West South Central.....	101	145	87	152	128	114	57	114	77	97
Mountain.....	112	104	71	61	86	98	69	78	134	70
Pacific.....	51	46	64	46	67	70	58	55	46	58

cases reported. \* Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>1</sup> Newark, N. J., Kansas City, Mo., Fargo, N. Dak., Topeka, Kans., Covington, Ky., Billings, Mont., Denver, Colo., and Los Angeles, Calif., not included.

<sup>2</sup> Billings, Mont., not included.

<sup>3</sup> Boise, Idaho, not included.

<sup>4</sup> Newark, N. J., not included.

<sup>5</sup> Kansas City, Mo., not included.

<sup>6</sup> Covington, Ky., not included.

<sup>7</sup> Billings, Mont., and Denver, Colo., not included.

<sup>8</sup> Los Angeles, Calif., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended May 14, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended May 14, 1932, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island <sup>1</sup> .....						
Nova Scotia.....		16				
New Brunswick <sup>1</sup> .....						
Quebec.....	1					7
Ontario.....	2	2		1		7
Manitoba.....						2
Saskatchewan.....					1	
Alberta <sup>1</sup> .....						
British Columbia.....	1		1			
Total.....	4	18	1	1	1	16

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended May 14, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 14, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Ophthalmia neonatorum.....	1
Chicken pox.....	47	Scarlet fever.....	62
Diphtheria.....	24	Tuberculosis.....	56
Erysipelas.....	7	Typhoid fever.....	7
German measles.....	9	Whooping cough.....	25
Measles.....	116		

### CZECHOSLOVAKIA

*Communicable diseases—March, 1932.*—During the month of March, 1932, certain communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	4		Puerperal fever.....	67	17
Cerebrospinal meningitis.....	10	4	Scarlet fever.....	1,573	28
Diphtheria.....	1,934	128	Trachoma.....	100	
Dysentery.....	23	4	Typhoid fever.....	290	26
Malaria.....	17		Typhus fever.....	1	
Paratyphoid fever.....	17	9			



## DENMARK

*Communicable diseases—March, 1932.*—During the month of March, 1932, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	7	Paratyphoid fever.....	11
Chicken pox.....	64	Polioomyelitis.....	4
Diphtheria and croup.....	251	Puerperal fever.....	16
Erysipelas.....	276	Scabies.....	728
German measles.....	10	Scarlet fever.....	169
Gonorrhea.....	804	Syphilis.....	92
Influenza.....	59, 146	Typhoid fever.....	2
Lethargic encephalitis.....	9	Undulant fever (Bac. abort. Bang).....	46
Measles.....	2, 992	Whooping cough.....	2, 969
Mumps.....	252		

## TRINIDAD

*Port of Spain—Vital statistics—April, 1931, 1932.*—During the months of April, 1932 and 1931, certain vital statistics were reported in Port of Spain, Trinidad, as follows:

	April, 1932	April, 1931		April, 1932	April, 1931
Number of births.....	183	170	Deaths under 1 year.....	17	19
Birth rate per 1,000 population....	31.6	30.1	Deaths under 1 year per 1,000 births.....	92.9	111.8
Number of deaths.....	90	109			
Death rate per 1,000 population....	15.5	19.3			



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## CHOLERA—Continued

[O indicates case; D, deaths; P, present]

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended—													
				February, 1932				March, 1932				April, 1932				May, 1932	
				13	20	27	5	12	19	26	2	9	16	23	30	7	14
India (Portuguese)		3	1														
D		3	1														
Indo-China (see also table below):																	
Pnompenh.				2													
D			2														
Saigon and Cholon.	P	2	1			1											
D																	
Reo:																	
Amara.	3	2															
D	4	2															
Amara Province.	3																
D	3																
Munstadq Province.	2																
D	2																
Nastiriyah.	3																
D	3																
Persia:	7																
D																	
Abedan.	1																
D	47																
Ahwaz.	39																
D	159	3															
Khorramshad.	115	10															
D																	
Kooh Berman.																	
D																	
Philippine Islands: Capiz Province.	27	26	22	13	10												
D	19	19	20	12	8												
Siam:																	
Ayudhya Province.	1		1														
D	1		1														
Bangkok.	1		1														
D	1		1														
On vessel:																	
S. S. Angara at Rangoon from Calcutta.																	
D																	
S. S. Narbada at Rangoon from Calcutta.																	
D																	

! A suspected case.

\* Figures for cholera in the Philippine Islands are subject to correction.

Place	Oscobor, ber, 1931	De- can- ber, 1931	Janu- ary, 1932	February, 1932				March, 1932				April, 1932			
				1-10				1-10				1-10			
				1-10	11-20	21-30		1-10	11-20	21-31		1-10	11-20	21-30	
Indo-China (French) (see also table above):															
Annam <sup>1</sup>	C			4											
Cambodia <sup>1</sup>	C	4	3	2	2			6	1	3		4	1	20	
Cochin-China <sup>1</sup>	C	18	2	2	2			3	1	1		3	2	8	
Laos <sup>1</sup>	C	14	14	5	7	P		3	2	4		3	6	13	
	C	13	4	4	6			2	1	2		2	3	13	
	C		7									7			
	C														

<sup>1</sup> Reports incomplete.

# PLAGUE:

Place	Nov. 15- Dec. 12, 1931	Dec. 13- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended—											
				February, 1932				March, 1932				April, 1932			
				13	20	27		6	12	19	26	2	9	16	23
Argentina: Cordoba Province <sup>1</sup>		1	1												
Asuncion															
San Miguel Island													2		
Tweed Island															
Belgian Congo															
British East Africa (see also table below):															
Tanganyika		1													
Uganda			10							2					
Canary Islands: Palma Island—Los Llanos		145	63	31	7	1					3	1	1	7	
		138	62	26	6	1						1	1	6	
				8											
			8												1

<sup>1</sup> Including plague in the United States and its possessions.

<sup>2</sup> 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued

## PLAGUE--Continued

[C indicates cases, D, deaths, F, present]

Place	Octo-ber, 1931	No. ven-ber, 1931	De-ber, 1931	Jan-ary, 1932	Feb-ary, 1932	March, 1932	April, 1932	Place	Octo-ber, 1931	No. ven-ber, 1931	De-ber, 1931	Jan-ary, 1932	Feb-ary, 1932	March, 1932	April, 1932
British East Africa (see also table above): Kenya.....	64	44	41	17	33	22	12	Pernu--Continued Department--Continued.							
Province:								(slanara.)							
Chimborazo.....	2	8		8	13			Libertad.....	C	14					
Lala.....	11	2		11				Lima.....	C	5		1			
Isle-China.....	3		9	17	P	P	9		C	2		6		1	
D	1		5	9			6	Plague-infected rate	D	4					
Madagascar (see also table above):								Lima.....	C	1					
Province:									C	1			1		
Ambohitampy.....				23	40			Pura.....	C	1			1		
C				28	38				C	1					
Ambohitra.....		20	143	166	90			Senegal	C	6	2				
C	8	37	121	122	81			Raol.....	C	2					
Anticimbe.....	17	27	56	53	45				C	4				10	
C	17	27	51	51	45			Dakar.....	C	4				5	
Maevatanana.....		4							C	10					
C		4						Diourbel.....	C	3					
Minarivao.....	18	10	14	15	13				C	1					
C	16	9	14	15	12			Louza.....	C	1					
Morananga.....	13	25	30	13	9				C	10					
C	11	25	30	13	9			Rufisque.....	C	12					
Tananariva.....	120	184	248	203	148				C	1					
C	117	178	241	198	140			Thies.....	C	1					
Pernu.....	8	27	31	11	2				C	1					
C	7	11	9	8	2			Yombel.....	C	17				9	
Department--									C	1				5	
C				3					C	1					

\* Reports incomplete.

## SMALLPOX

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended—															
				February, 1932				March, 1932				April, 1932				May, 1932			
				13	20	27	5	12	19	26	3	9	16	23	30	7	14		
Aden.																			
Algeria:			2							1									
Algiers.		1																	
Constantine Department.																			
Philippeville.																		1	1
Southern Territories.																		1	
Brazil:																			
Porto Alegre (alastrim).	51	35	34			3	4			3	1	1	2	1					
Rio de Janeiro.	1	2																	
Santos.	1	1																	
British East Africa: Tanganyika.	2	55	24			4	1												
British South Africa:																			
Northern Rhodesia.	4	4	7			1													
Southern Rhodesia.	7	5																	
Canada:																			
Alberta.	3	11																	
British Columbia.	2	2	18			4	3	7			2	1							
Manitoba.			10																
Nova Scotia.	1					1													
Ontario.	11	14	6			4	1	1				3	2	4				1	
North Bay.						1													
Toronto.	1																		
Quebec.		3	1																
Saskatchewan.		11	35			23		5				1		5	2	3			
China:																			
Yocoppia.	34	11	2																
Amoy.	46	218	183			34	22	15	12	8	10	7	5	4	1				
Canton.	26	79	91			14	7	5	7	3	10	4	3	3	1				
Foochow.	14	18	27			6	5	15	21	18	20	11	24	18	22	17		19	9
Hankow.									7										
Hong Kong.	P	P	P			2	1	P	P	P	3	2	1	P	1				
Manchuria—Dairen.	6	12	11			19	6	12	7	17	9	12	13	21	9	7			
	1	1	6			9	3	7	6	7	5	2	6	6	6	7			
						9		3	1	1	7	5	7	7	7				

122 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 18, 1932.



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER--Continued**

## SMALLPOX—Continued

[(' indicates cases, D, deaths; P, present]

[illegible]





Place	No. com-ber, 1931	January, 1932				February, 1932				March, 1932				April, 1932			
		1-10		11-20		21-31		1-10		11-20		21-31		1-10		11-20	
		De-ber, 1931		1-10		11-20		1-10		11-20		1-10		11-20		1-10	
Gold Coast																	
Upper-China (see also table above)	C	120	409	11	107	191	145	206	309	230	275	222	175	247	146		
Ivory Coast	D	23	93	1	52	45	47	98	86	109	113	120	80	97	64		
Syria; Beirut	D	1															
				2	3									1	1		
Place	No. com-ber, 1931	January, 1932		February, 1932		March, 1932		April, 1932		May, 1932		June, 1932		July, 1932		August, 1932	
		1-10		11-20		21-31		1-10		11-20		21-31		1-10		11-20	
		De-ber, 1931		1-10		11-20		1-10		11-20		21-31		1-10		11-20	
Chosen	C	7	2	1	1	6	30										
France	D	1				9											
Guatemala	D																

\* A suspected case.





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended--												May 1932										
				February, 1932					March, 1932					April, 1932												
				13	20	27	5	12	19	26	2	9	16	23	30											
Brazil:																										
Bahia State.....		2																								
Espirito Santo.....																										
Ceara State.....																										
Espirito Santo State <sup>1</sup> .....																										
Santa Theresa (about 56 miles from Victoria).....																										
Dahomey: Porto Novo.....																										
Gambia Coast:																										
Akadina.....																										
Cape Coast.....																										
Sierra Leone District.....																										
Salaga.....																										
Tamale.....																										
Yapel.....																										
Nigeria.....																										
Togo (French): Atakpame—Anie Circle.....																										

<sup>1</sup> During the 3 weeks ended Apr. 30, 1932, a number of cases of suspected yellow fever were reported in the interior of the State.

UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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## SPECIAL ARTICLES

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Preparation of Typhus Vaccine from Infected Fleas  
Some Instances of Rapid Rat Infestation of Vessels



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

### DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. C. WILLIAMS, *Chief of Division*

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## THE PREPARATION OF A VACCINE FROM FLEAS INFECTED WITH ENDEMIC TYPHUS

By R. E. DYER, *Surgeon*; W. G. WORKMAN, *Assistant Surgeon*; and A. RUMREICH and L. F. BADGER, *Passed Assistant Surgeons*; *United States Public Health Service*

Ricketts (1), in 1909, succeeded in protecting guinea pigs against Rocky Mountain spotted fever by injecting the tissues and eggs of infected ticks after the material had been sterilized either by desiccation or by chloroform. In 1924, Breinl (2) immunized rabbits against typhus by inoculating them with a phenolized emulsion of intestines from typhus-infected lice, and Spencer and Parker (3), in 1924 and 1925, prepared a vaccine against Rocky Mountain spotted fever by phenolizing emulsions of infected ticks. The latter authors found that this vaccine would protect guinea pigs and monkeys against subsequent inoculations of virus, and also that blood serum from a vaccinated man contained virus-neutralizing qualities.

Zinsser and Batchelder (4), in 1930, and Zinsser and Castaneda (5), in 1931, protected guinea pigs against typhus with a vaccine prepared by formalinizing tunica material from typhus-infected guinea pigs. Kemp (6), in 1932, with vaccine prepared according to Zinsser's method, concluded that the immunity produced was not lasting and that the vaccine retained its potency for a short time only.

Following the method outlined by Spencer and Parker in preparing their vaccine against Rocky Mountain spotted fever, we have attempted to prepare a vaccine against typhus, using typhus-infected fleas as a source of virus.

The species of fleas used in these experiments was the rat flea *Xenopsylla cheopis*. Fleas of this species, after feeding on white rats infected with endemic typhus, were collected and emulsified in salt solution. The potency of the flea virus in the emulsion was then titrated by inoculating guinea pigs with graduated dilutions of the emulsion of fleas. The results of this titration showed that less than 1.7 fleas did not contain enough virus to infect a guinea pig. Four-tenths per cent phenol was added to the original emulsion, and the mixture was allowed to stand for five days. After centrifugation, the supernatant fluid was used to inoculate 24 guinea pigs, each animal receiving 1 c c. Twelve of these guinea pigs were given an

additional 0.5 c c each, one week later. At the end of three weeks these vaccinated animals were tested for immunity to endemic typhus. Of the guinea pigs receiving one dose of vaccine, 3 had died. Of the remaining 9, 7 were not immune, 1 showed a febrile reaction but no scrotal lesions, and 1 failed to show any reaction to the test inoculation. Of the 12 guinea pigs receiving two doses of vaccine, 1 died, 9 were found nonimmune, and 2 showed febrile reactions but no scrotal involvement. All controls reacted with typical febrile and scrotal reactions.

Since the virus used in the preparation of the vaccine in the foregoing experiment was rather weak, a second vaccine was made from a freshly infected lot of fleas. Titration of the emulsion of the infected fleas, used in preparing this second lot of vaccine, showed that there was sufficient virus in one-fiftieth of a flea to infect a guinea pig. The vaccine was prepared so that each cubic centimeter represented the virus from 20 fleas. Forty-four guinea pigs each received 1 c c of this vaccine. To determine the absence of live virus in the vaccine, 5 of the vaccinated animals were killed at the end of 10 days and emulsions of their spleens were injected into other guinea pigs. None of these latter animals developed signs of typhus nor were those tested found immune to subsequent inoculation of typhus virus. Of the remaining 39 guinea pigs, 15 died before being tested for immunity.

Eight of the vaccinated guinea pigs were tested for immunity to endemic typhus between two and three weeks after vaccination. Six of these animals were found to be nonimmune, 1 developed scrotal lesions only, and 1 showed fever on one day with a questionable scrotal reaction. The remaining 16 vaccinated guinea pigs were tested for immunity to endemic typhus between two and three months after vaccination. Three of these were definitely not immune; 3 developed fever for one or two days without scrotal involvement, 1 had fever one day with questionable scrotal involvement, 1 showed scrotal involvement for one day with no fever, while 8 developed no evidence of endemic typhus. For the test inoculations the vaccinated guinea pigs were divided into groups of two to six guinea pigs. In two of the groups tested, 6 of a total of 8 vaccinated guinea pigs failed to react to the immunity test, while all 6 controls reacted with fever and scrotal involvement. In testing the immunity of a third group, one of two guinea pigs used as controls for two vaccinated animals failed to develop scrotal involvement. Neither of the two vaccinated animals inoculated with this same virus showed any sign of endemic typhus.

In the first experiment reported, there was no protection following vaccination, while in the second experiment apparently there was protection against a subsequent inoculation of endemic typhus virus given two to three months after vaccination. As neither of these

vaccines was prepared from fleas containing a highly potent virus, it seems reasonable to hope that a vaccine prepared from a virus as potent as that recently reported by us (7), in which one one hundred and twenty-eight thousandths of a flea contained enough virus to infect a guinea pig, should afford a higher degree of protection.

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### SOME INSTANCES OF RAPID RAT INFESTATION OF VESSELS

By C. L. WILLIAMS, *Surgeon, United States Public Health Service*

While searching the literature several years ago in order to locate references to the occurrence of rat fleas on ships, the writer read an article by Fromme (1), reporting the discovery of rat fleas on ships at Hamburg, in which the attention was forcibly called to the fact that fleas were found on only 4 ships from Rosario, Argentina, 2 from India, and 1 from Smyrna out of a total of 51 vessels investigated.

On the other 44 vessels 431 rats were secured—very nearly 10 rats per ship. On the ship from Smyrna 5 rats were killed, on the two from India 60 were secured, while on the four from Rosario 202 were taken—an average on these latter of slightly over 50 rats per ship. On one of the ships from Rosario six plague-infected rats were found.

Fromme's paper was encountered shortly after reading Norman White's *Review of Plague in the Far East* (2), in which that writer emphatically states that the overseas transfer of plague is inseparably bound up with the grain trade. Rosario, of course, is one of the great grain ports of the world.

A study of the fumigation histories of individual vessels that have been kept for a number of years at the New York Quarantine Station has disclosed a number of instances of apparently very sudden heavy infestations on ships. Upon closer investigation, in one or two instances it was possible definitely to connect this sudden influx of rats with the taking aboard of a single cargo.

During the calendar year 1927 six plague-infected ships arrived at European ports, and one such ship arrived at a South American port, from Rosario. All of these vessels carried grain, and all of them were heavily rat infested. The exact records are not available, but it is known that on one more than 270 rats were recovered and on another well over 200.

When the finger so persistently points at one port, it naturally follows that that port is singled out for particular quarantine treatment and is consequently constantly before the attention of quarantine officers. It was to be expected, therefore, that additional instances of unusual rat infestation, apparently associated with Rosario, would be noted whenever they occurred. The following histories are taken from the New York quarantine records:

Steamship *Ch*—: Fumigated August 29, 1929; 43 rats. Carried grain from Rosario to England; proceeded thence to Russia and from there to New York.

Steamship *A*—: Fumigated August 12, 1929; 78 rats. Carried grain from Rosario to Bahia; proceeded thence to Barbados and from there to New York.

Steamship *C*— *B*—: Fumigated December 17, 1929; 78 rats. Carried grain from Rosario to European ports; proceeded thence to Archangel and from there to New York.

Steamship *Eu*—: Fumigated March 1, 1930; 72 rats. Carried grain from Rosario to European ports; proceeded thence to New York.

Steamship *E*—: Fumigated April 20, 1929; 109 rats. Carried grain from Rosario to European ports and then proceeded to New York.

Steamship *Ph*—: Fumigated at New York in August, 1929; no rats. Proceeded to Rosario and carried grain from there to Bahia. Loaded with coffee at Santos and proceeded to New York, where fumigation yielded 35 rats.

Steamship *Ra*—: Fumigated February 10, 1929; 135 rats. This ship had been engaged in the grain trade between Rosario and Europe, but on this occasion it loaded linseed at Rosario and proceeded to New York.

Steamship *Mi*—: Fumigated February 20, 1930; 170 rats. This ship had been fumigated at New York about 14 months previously, with the recovery of no rats. It proceeded to South America, where it was engaged during the interim in grain trade between Rosario and other South American ports, finally picking up a general cargo for New York.

Steamship *St*—: Fumigated June 17, 1929; 105 rats. This ship had been engaged in the grain trade between Rosario and Europe, but on this trip brought linseed from Rosario to New York.

Motor ship *Ti*—: Fumigated August 28, 1928; 206 rats. Carried grain from Rosario to north European ports; proceeded thence to New York in ballast.

Motor ship *T*—: This ship was engaged in the grain trade from Rosario to north Europe. After one of these trips it proceeded in ballast to New York, where fumigation yielded 104 rats. It then proceeded to Rosario, took grain to Rotterdam, and returned in ballast to New York, where fumigation, October 12, 1929, yielded 69 rats. Following this, several trips were made between New York and South American ports, including Rosario, but carrying linseed. None of six fumigations at New York yielded over 28 rats until the vessel made one trip with grain to Europe and then proceeded in ballast to New York, where fumigation, July 27, 1931, yielded 109 rats.

*Steamship Tin*—: Fumigated December 20, 1928; 134 rats. This ship had been engaged in the grain trade from Rosario to Europe, but on this trip brought linseed and coffee to New York. It returned to South America, making one or two coastwise trips carrying grain, then proceeded with coffee to New York where, on June 27, 1929, fumigation yielded 91 rats.

*Steamship Tr*—: Fumigated March 24, 1929; 127 rats. This ship had carried grain from Rosario to Europe, but on this trip carried linseed to New York.

*Steamship Tre*—: Fumigated October 17, 1929; 129 rats. This ship had carried grain from Rosario to Europe, but on this trip carried linseed to American ports, being remanded to New York. It returned to South America and loaded linseed for New York, where fumigation, February 20, 1930, yielded no rats.

*Steamship Ar*—: Fumigated February 26, 1929; 69 rats. This ship had been engaged in the grain trade between Rosario and northern Europe. It was of special interest, because there was very little permanent rat harborage in the holds and numbers of rat nests were found between pieces of cargo. The vessel returned to South America and on the following trip carried grain from Rosario to other South American ports, then picked up a general cargo for New York. Fumigation at New York on November 6, 1929, yielded 36 rats. Next trip the ship did not visit Rosario, but returned with coffee from Santos. Fumigation February 18, 1930, yielded 1 rat.

*Steamship Bi*—: Fumigated May 17, 1929; 116 rats. This ship had been engaged in grain trade between Rosario and Europe, but on this occasion brought coffee and other cargo to New York.

*Steamship Co*—: Fumigated September 20, 1929; 129 rats. This ship carried grain from Rosario to England, then proceeded to Archangel and loaded lumber for New York.

*Steamship Col*—: Fumigated November 18, 1928; 119 rats. This ship also carried grain from Rosario to British ports, proceeded thence to Archangel and loaded lumber for New York.

*Motor ship Ta*—: Fumigated August 3, 1929; 41 rats. Carried grain from Rosario to Rotterdam, and proceeded from there to New York in ballast.

Quite recently, there occurred a most illuminating instance of infestation in the case of the motor ship *Ta*—. This ship was fumigated at New York, October 3, 1928, and yielded 34 rats. It then proceeded to South America, took grain at Rosario and carried it to Mediterranean ports, where a general cargo was loaded and carried to New York. Fumigation at New York, February 11, 1929, yielded 143 rats. Between then and June 3, 1931, the vessel was engaged in trade between New York and South American ports, carrying cargoes other than grain; it was fumigated five times at New York during this period and yielded 42, 7, 2, 13, and 8 rats, respectively. An inspection on August 31, 1931, showed an estimated presence of 15 rats. Following this inspection the ship proceeded to South America and at Rosario loaded grain, which was carried to Scandinavian ports. Thence the ship proceeded to Boston and other American ports, reaching New Orleans February 10, 1932, when fumigation yielded 144 rats.



**CONTRASTING NONRAT-FOOD CARGOES**

The records at New York furnish an excellent example of how the rat infestation may be primarily affected by the cargo taken on at the same port of call. There is a considerable and rather constant linseed importation into New York from Rosario. A number of ships are engaged more or less exclusively in this trade, making regular runs from New York to ports on the east coast of South America, finally loading linseed at Rosario and bringing it directly, or almost directly, to New York. These ships, once freed of rats, do not acquire large colonies thereafter, but in many cases will remain quite rat free, sometimes for three or four voyages in this trade, and in some instances on record for periods of three or four years. Furthermore, reference to the specific instances cited herein will show cases of vessels retaining only a moderate rat infestation while carrying linseed between Rosario and New York, but suddenly picking up a large colony of rats when shifted to a grain-carrying run from Rosario to Europe. In all of the instances cited, wherein heavy rat infestation was found on a vessel bringing linseed from Rosario to New York, the previous history showed either that fumigation had not been carried out for a considerable period, during which the vessel was engaged in some other trade, or that the vessel had been carrying grain from Rosario on one or more trips prior to picking up the linseed cargo for New York.

**ASSOCIATION WITH HARBORAGE**

While it is true that on some of the ships listed herein extensive rat harborage existed, on others it was limited, and on at least three it was so limited that it was insufficient for the numbers of rats. On these three vessels the rat colony had utilized the cargo as harborage and had built nests between pieces of cargo and in the corners of the deck that at the time were covered with cargo. In the latest instance cited, the ship was in process of rat proofing, but this had not been completed in the most heavily infested hold, where the rats had made their way into cold-storage insulation.

**QUARANTINE APPLICATION**

The point to be noted in regard to these instances of the rapid building up of rat colonies, apparently associated with the loading of rat-food cargoes at certain ports and quite definitely associated in a very considerable number of cases with the loading of such cargoes at one particular port, is that such occurrences may entirely negate previous rat eradication accomplished either by fumigation or by rat

proofing. While it has not occurred in our experience, these circumstances suggest that a completely rat-proof vessel might go to Rosario and in loading grain temporarily acquire a colony of a hundred rats or more, which rats, if no immediate destructive measures were carried out, might remain on the vessel for a considerable period, possibly until eliminated by fumigation or disembarkation at subsequent ports of call.

While experience at New York has been that a predominant proportion of these instances has been associated with the carriage of grain from Rosario to Europe, it is nevertheless true that the same occurs sometimes on ships on other routes. Instances observed at New York have been associated with the loading of native cargoes at West African ports, with the loading of rice, tapioca, and similar food cargoes at Far Eastern ports, with the loading of rat-food cargoes at the east coast ports of South America, and with the loading of rat-food cargoes at Mediterranean ports.

While large rat colonies have been observed on ships on other runs and carrying other cargoes, the circumstance of rapid infestation has not usually appeared; in such cases the large colony nearly always was definitely bound up with the presence of extensive harborage and the history was generally one of persistent rat-infestation over a period of years.

#### INFESTATION INSPECTION

Fortunately, these heavy infestations can always be rapidly diagnosed, even by a relatively superficial infestation inspection. In all the cases cited herein, signs of rats were plentiful and obvious, both in the case of the ships arriving empty and in the case of those arriving loaded. If inspections are carried out on all vessels with a recent history suggesting the possibility of rapid influx of infestation, appreciable errors should not occur.

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#### COURT DECISION RELATING TO PUBLIC HEALTH

*Recovery of damages for nuisance caused by operation of sewage disposal plant.*—(Kentucky Court of Appeals; *City of Harrodsburg v. Brewer et al.*, *Same v. Frost*, *Same v. Sallee*, 48 S. W. (2d) 817; de-

cided Mar. 4, 1932.) The city of Harrodsburg constructed and began operating a sewage disposal plant. Several months after such plant had been in operation, a number of persons who owned homes located near the plant brought actions against the city to recover damages because of a nuisance created by the plant's operation. The plaintiffs claimed that the atmosphere became polluted with foul odors to such an extent as to render their premises almost uninhabitable at times. The plaintiffs prevailed in the trial court and, on the theory that the cause of the injury to their premises was permanent, the measure of damages awarded was the difference between the market value of the property immediately before the installation of the disposal plant and the reasonable market value of the property under the circumstances at the time of trial. The court of appeals pointed out that the evidence was to the effect that the disposal plant was of the latest type and that the odors would disappear when a correct knowledge of how to operate the plant was acquired. In view of the fact that the cause of the injury to plaintiffs' premises was the improper use of a properly constructed plant, the appellate court held that the trial court erred in permitting recovery for a permanent structure and that the damages should have been confined to decreased rental value and impairment of use and occupation by the owners who occupied their premises. It was the court's conclusion that the city should have the right sufficiently to experiment with the operation of the plant so as to determine whether it could or could not be operated in a manner unproductive of any nuisance to near-by inhabitants, and should be given the opportunity, after such sufficient time, to abandon the use of the plant before being charged with the duty of responding in damages as from a permanent cause.

### DEATHS DURING WEEK ENDING MAY 28, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended May 28, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended May 28, 1932	Corresponding week, 1931
Policies in force.....	73, 000, 630	75, 152, 855
Number of death claims.....	13, 176	13, 756
Death claims per 1,000 policies in force, annual rate..	9. 4	9. 5
Death claims per 1,000 policies, first 21 weeks of year, annual rate.....	10. 4	10. 8

*Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended May 28, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended May 28, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 21 weeks	
	Total deaths	Death rate <sup>2</sup>	Deaths under 1 year	Infant mortality rate	Death rate <sup>2</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	7,832	11.2	651	4.52	11.2	624	12.3	13.3
Akron.....	34	6.7	6	75	6.7	5	7.7	8.3
Albany.....	40	16.0	1	20	17.0	4	14.9	15.4
Atlanta.....	70	12.9	7	68	18.2	5	14.0	16.1
White.....	34	9.5	5	74	14.7	4	11.0	12.8
Colored.....	36	19.7	2	57	25.2	1	19.9	22.5
Baltimore.....	199	12.7	16	57	12.8	8	14.4	16.3
White.....	162	12.6	14	64	11.3	2	13.4	14.9
Colored.....	37	12.9	2	32	19.5	6	19.0	22.8
Birmingham.....	50	9.4	6	63	14.1	7	12.0	11.9
White.....	18	5.5	2	33	11.3	4	9.6	11.6
Colored.....	32	15.9	4	108	18.8	3	16.0	20.4
Boston.....	237	15.7	26	71	12.2	11	15.5	15.8
Bridgeport.....	38	13.5	2	36	10.3	2	11.7	12.3
Buffalo.....	155	13.8	12	56	11.3	12	13.9	14.6
Cambridge.....	22	10.0	5	101	10.5	0	14.1	13.8
Camden.....	39	17.1	7	123	10.1	3	16.1	16.4
Canton.....	27	13.0	1	25	10.3	2	10.2	11.3
Chicago.....	644	9.6	40	39	10.3	30	10.7	11.6
Cincinnati.....	115	13.0	10	64	14.1	14	16.1	17.3
Cleveland.....	187	10.6	14	45	9.9	15	12.0	12.2
Columbus.....	83	14.5	2	29	14.5	4	14.6	15.1
Dallas.....	50	9.3	6	—	9.4	9	10.9	12.3
White.....	34	7.6	5	—	7.9	7	9.9	10.9
Colored.....	16	17.2	1	—	16.5	2	15.4	19.0
Dayton.....	60	15.1	5	72	15.3	6	13.3	13.3
Denver.....	88	15.6	7	68	12.7	6	15.6	15.1
Des Moines.....	25	8.9	3	51	10.5	5	12.1	11.8
Detroit.....	263	8.0	21	38	7.9	50	8.4	9.4
Duluth.....	21	10.8	1	29	10.2	0	11.0	11.4
El Paso.....	32	15.6	12	—	13.9	6	14.4	17.0
Erie.....	31	13.6	1	21	8.4	4	12.4	11.6
Evansville.....	23	11.3	2	7	12.5	1	10.1	11.9
Fall River.....	22	10.0	2	57	18.5	5	13.0	13.7
Flint.....	20	6.1	4	39	8.3	2	8.4	8.0
Fort Wayne.....	27	11.6	3	77	11.9	2	10.8	11.5
Fort Worth.....	27	8.3	6	—	9.3	4	10.4	12.3
White.....	22	8.0	5	—	9.3	4	10.0	11.7
Colored.....	5	9.8	1	—	9.6	0	12.4	15.0
Grand Rapids.....	23	6.9	3	51	10.0	3	9.5	9.7
Hartford.....	38	11.7	0	0	—	—	—	—
Houston.....	66	10.6	7	—	11.6	7	11.1	11.5
White.....	39	8.5	4	—	9.2	5	10.3	10.6
Colored.....	27	16.5	3	—	18.2	2	13.3	14.1
Indianapolis.....	112	15.6	13	105	11.7	6	13.7	14.7
White.....	97	15.4	9	83	11.7	6	13.3	14.3
Colored.....	15	17.0	4	274	11.5	0	16.6	17.9
Jersey City.....	77	12.5	11	91	9.6	9	12.1	13.0
Kansas City, Kans.....	35	14.8	7	155	13.6	2	13.1	14.6
White.....	28	14.6	5	134	11.0	1	12.8	13.5
Colored.....	7	15.4	2	250	24.4	1	14.4	19.1
Kansas City, Mo.....	95	11.9	8	90	11.2	13	12.8	14.6
Knoxville.....	21	9.8	7	177	9.5	2	12.8	13.9
White.....	16	8.9	7	195	8.6	2	11.6	13.0
Colored.....	5	14.3	0	0	14.6	0	18.9	18.7
Long Beach.....	25	8.1	1	26	9.9	1	9.6	10.8
Los Angeles.....	293	11.1	14	42	10.8	25	11.2	11.4
Louisville.....	67	11.3	0	0	16.2	3	14.0	16.0
White.....	51	10.2	0	0	13.8	1	12.6	14.3
Colored.....	16	17.5	0	0	29.5	2	21.7	25.2
Lowell.....	35	18.3	4	105	10.9	4	14.8	13.6
Lynn.....	21	10.7	1	28	9.6	0	11.6	11.4
Memphis.....	68	13.5	7	76	16.3	7	16.6	17.4
White.....	33	10.6	4	68	13.7	1	13.0	14.2
Colored.....	35	18.2	3	90	20.6	6	22.5	22.5
Miami.....	16	7.3	1	28	8.8	1	12.2	13.5
White.....	13	7.7	1	39	6.6	0	11.2	12.5
Colored.....	3	6.2	0	0	16.5	1	15.5	16.8

See footnotes at end of table.

*Deaths from all causes in certain large cities of the United States during the week ended May 28, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued*

City	Week ended May 28, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 21 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>3</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Milwaukee.....	90	7.8	5	24	9.4	14	9.5	10.8
Minneapolis.....	77	8.4	7	46	9.6	4	11.1	11.9
Nashville <sup>4</sup> .....	46	15.3	2	30	15.8	8	15.2	17.7
White.....	25	11.5	2	39	12.5	2	13.9	15.3
Colored.....	21	25.6	0	6	24.4	6	18.7	23.9
New Bedford <sup>5</sup> .....	27	12.5	2	58	9.3	0	12.8	13.6
New Haven.....	36	11.6	2	40	12.5	5	13.3	13.2
New Orleans <sup>6</sup> .....	134	14.8	14	80	14.2	7	15.6	18.1
White.....	80	12.4	7	61	13.0	2	13.2	14.6
Colored.....	54	20.5	7	114	17.0	5	21.3	26.2
New York.....	1,453	10.5	132	59	10.6	126	11.7	12.8
Bronx Borough.....	206	7.8	14	40	7.5	14	8.7	9.3
Brooklyn Borough.....	451	8.8	45	80	9.1	51	10.9	11.8
Manhattan Borough.....	570	16.8	53	76	17.0	49	18.0	19.6
Queens Borough.....	166	7.2	10	42	6.6	10	7.5	8.2
Richmond Borough.....	61	19.0	10	197	15.6	2	14.8	14.3
Newark, N. J.....	80	9.3	4	22	9.7	9	11.7	13.1
Oakland.....	65	11.4	4	50	9.5	8	11.1	11.2
Oklahoma City.....	44	11.2	2	27	9.3	1	10.7	12.3
Omaha.....	35	8.4	3	84	19.7	6	14.2	14.6
Paterson.....	34	12.8	3	54	10.5	1	13.6	15.3
Peoria.....	24	11.3	1	28	13.0	4	12.0	13.4
Philadelphia.....	448	11.8	31	48	11.8	45	13.7	16.3
Pittsburgh.....	160	12.3	18	82	11.0	11	14.2	16.8
Portland, Oreg.....	57	9.6	2	26	11.9	4	12.0	12.5
Providence.....	55	11.2	3	29	12.7	1	14.9	14.7
Richmond <sup>6</sup> .....	34	9.6	3	45	13.3	8	14.5	17.2
White.....	20	7.9	2	45	8.7	1	12.1	14.7
Colored.....	14	13.9	1	46	24.6	2	20.6	23.6
Rochester.....	69	10.8	2	19	9.9	6	13.0	13.4
St. Louis.....	213	13.4	10	36	12.1	6	14.6	16.9
St. Paul.....	34	6.4	0	0	10.4	1	11.1	11.5
Salt Lake City <sup>7</sup> .....	29	10.4	2	31	14.6	3	11.3	13.0
San Antonio.....	71	15.0	22	18.0	22	14.5	16.2	16.2
San Diego.....	37	11.8	5	108	16.3	0	15.4	14.9
San Francisco.....	175	13.8	9	62	10.1	0	13.3	13.8
Schenectady.....	18	9.8	1	29	7.6	0	11.8	11.6
Seattle.....	74	10.3	2	20	11.5	3	12.4	12.5
Somerville.....	17	8.4	0	0	9.4	1	10.0	11.0
South Bend.....	14	6.6	1	29	8.2	0	8.0	8.9
Spokane.....	27	12.1	1	27	15.2	2	12.4	12.9
Springfield, Mass.....	35	11.9	4	67	11.3	0	11.9	13.7
Syracuse.....	47	11.4	3	39	12.5	4	12.7	12.6
Tacoma.....	33	15.9	1	28	12.1	1	12.9	13.7
Tampa <sup>8</sup> .....	18	8.7	1	29	9.9	2	12.4	12.9
White.....	13	8.0	0	0	10.1	2	11.9	11.8
Colored.....	5	11.5	1	168	9.4	0	14.5	16.8
Toledo.....	68	11.8	5	54	10.5	7	12.4	12.9
Trenton.....	38	16.0	3	59	19.4	2	17.4	19.0
Utica.....	22	11.2	3	85	13.8	2	16.9	15.8
Washington, D. C. <sup>9</sup> .....	156	16.5	14	79	14.5	8	17.5	17.6
White.....	105	15.4	8	66	12.2	4	15.6	15.0
Colored.....	51	19.5	6	107	20.9	4	22.3	24.4
Waterbury.....	11	5.7	0	0	6.7	1	9.9	10.7
Wilmington, Del. <sup>7</sup> .....	24	16.7	2	45	10.3	0	16.9	16.0
Worcester.....	41	10.8	5	70	11.4	5	13.5	14.4
Yonkers.....	29	10.7	0	0	6.8	0	8.6	9.6
Youngstown.....	40	11.9	5	81	6.9	2	10.8	11.1

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 81 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 23; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 37; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 26; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 37.

<sup>7</sup> Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

<sup>8</sup> Figures for Hartford not shown in totals.

# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended June 4, 1932, and June 6, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 4, 1932, and June 6, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931
<b>New England States.</b>								
Maine .....	1	4	4	3	104	34	0	0
New Hampshire .....	1	1	—	—	35	38	1	1
Vermont .....	1	1	—	—	358	1	0	0
Massachusetts .....	38	50	2	2	1,009	645	2	4
Rhode Island .....	4	9	—	—	32	111	0	0
Connecticut .....	3	6	2	1	221	391	0	1
<b>Middle Atlantic States.</b>								
New York .....	61	159	10	18	2,150	3,174	6	11
New Jersey .....	25	37	7	20	769	943	1	3
Pennsylvania .....	63	76	—	—	1,629	2,874	14	9
<b>East North Central States:</b>								
Ohio .....	31	17	4	14	2,528	857	5	0
Indiana .....	15	18	14	—	125	521	6	2
Illinois .....	51	124	58	5	1,083	1,970	8	10
Michigan .....	18	20	6	4	2,691	401	3	5
Wisconsin .....	6	18	30	17	1,570	788	0	1
<b>West North Central States:</b>								
Minnesota .....	4	12	3	—	88	240	1	4
Iowa .....	9	6	—	—	3	62	0	0
Missouri .....	23	21	2	2	61	238	7	4
North Dakota .....	3	2	—	—	20	65	1	1
South Dakota .....	4	2	—	1	13	17	0	1
Nebraska .....	8	9	—	—	7	2	0	2
Kansas .....	8	5	1	1	75	131	1	1
<b>South Atlantic States:</b>								
Delaware .....	1	—	—	—	—	89	0	0
Maryland .....	5	18	3	2	33	740	1	3
District of Columbia .....	7	5	—	—	20	107	0	1
Virginia .....	—	—	—	—	—	—	1	—
West Virginia .....	7	7	29	24	155	199	0	2
North Carolina .....	12	14	48	8	589	868	2	1
South Carolina .....	5	13	249	282	214	171	0	1
Georgia .....	4	3	30	35	37	111	1	0
Florida .....	4	1	1	4	6	161	0	1

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 4, 1932, and June 6, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931
East South Central States:								
Kentucky.....	6	8	17	—	32	181	0	2
Tennessee.....	1	5	21	17	5	366	3	1
Alabama.....	9	8	32	14	8	104	3	0
Mississippi.....	4	6	—	—	—	—	0	5
West South Central States:								
Arkansas.....	—	2	13	11	—	53	0	0
Louisiana.....	20	18	6	12	5	8	1	1
Oklahoma.....	8	11	22	46	19	77	0	0
Texas.....	27	14	33	31	337	89	1	1
Mountain States:								
Montana.....	1	1	1	—	43	37	0	2
Idaho.....	—	3	—	—	—	4	0	0
Wyoming.....	—	5	—	—	55	3	1	0
Colorado.....	10	10	—	—	126	474	1	2
New Mexico.....	7	10	7	—	22	51	0	0
Arizona.....	2	—	6	2	1	38	0	1
Utah.....	—	1	—	1	2	4	0	1
Pacific States:								
Washington.....	8	4	—	—	183	132	1	0
Oregon.....	4	6	27	6	221	64	0	0
California.....	60	58	41	36	264	935	1	1
Total.....	618	837	729	609	16,946	18,588	73	92

Division and State	Polio myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931
New England States:								
Maine.....	0	0	7	38	0	0	2	0
New Hampshire.....	0	0	17	0	0	0	0	0
Vermont.....	0	0	15	3	4	4	0	0
Massachusetts.....	1	3	368	264	0	0	7	3
Rhode Island.....	0	0	45	34	0	0	0	0
Connecticut.....	2	1	76	37	0	0	1	2
Middle Atlantic States:								
New York.....	3	1	964	746	0	5	6	14
New Jersey.....	0	1	239	279	0	0	2	5
Pennsylvania.....	1	1	762	518	0	0	6	8
East North Central States:								
Ohio.....	3	0	328	304	23	17	8	9
Indiana.....	0	0	65	155	19	121	12	2
Illinois.....	1	0	319	473	7	29	7	8
Michigan.....	1	1	503	395	9	17	8	4
Wisconsin.....	0	0	64	104	3	6	0	0
West North Central States:								
Minnesota.....	0	0	69	58	5	11	1	3
Iowa.....	0	1	22	48	16	64	1	3
Missouri.....	0	1	29	150	4	51	0	8
North Dakota.....	0	0	1	19	1	16	1	1
South Dakota.....	0	0	3	8	1	19	3	0
Nebraska.....	0	0	15	31	16	30	0	0
Kansas.....	0	1	24	23	5	57	0	2
South Atlantic States:								
Delaware.....	0	0	9	9	0	0	1	0
Maryland.....	1	0	60	51	0	0	7	6
District of Columbia.....	0	0	14	16	0	0	0	0
Virginia.....	2	—	—	—	—	—	—	—
West Virginia.....	0	1	17	19	3	7	5	5
North Carolina.....	2	0	35	15	1	4	9	17
South Carolina.....	2	1	7	0	0	7	20	19
Georgia.....	0	1	2	41	0	0	19	19
Florida.....	0	0	0	4	0	0	0	1

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 4, 1932, and June 6, 1931—Continued*

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931	Week ended June 4, 1932	Week ended June 6, 1931
<b>East South Central States:</b>								
Kentucky.....	0	0	18	55	1	5	15	6
Tennessee.....	1	0	17	12	30	25	13	6
Alabama.....	0	1	4	11	9	28	5	11
Mississippi.....	0	0	6	9	5	37	13	17
<b>West South Central States:</b>								
Arkansas.....	0	0	4	13	3	31	5	9
Louisiana.....	0	0	10	8	1	27	10	12
Oklahoma.....	0	0	8	15	23	67	7	3
Texas.....	1	0	30	28	48	79	3	10
<b>Mountain States</b>								
Montana.....	0	0	7	25	3	0	4	3
Idaho.....	0	0	1	6	0	2	0	0
Wyoming.....	0	0	7	10	0	0	0	0
Colorado.....	0	0	16	20	1	22	2	4
New Mexico.....	0	0	11	5	2	0	3	0
Arizona.....	0	0	6	0	1	2	0	3
Utah.....	0	2	2	2	0	0	0	0
<b>Pacific States</b>								
Washington.....	0	0	26	26	10	21	6	5
Oregon.....	0	0	10	19	15	23	0	4
California.....	3	9	141	97	9	24	8	10
<b>Total</b> .....	24	25	4, 421	4, 207	278	678	215	242

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Typhus fever, week ended June 4, 1932, 15 cases. 1 case in Maryland, 5 cases in Georgia, 3 cases in Florida, and 6 cases in Alabama.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influenza	Malaria	Measles	Pellagra	Polio- myelitis	Scarlet fever	Smallpox	Typhoid fever
<b>March, 1932</b>										
Hawaii Territory.....	2	33	10	-----	358	-----	-----	6	-----	11
<b>April, 1932</b>										
California.....	12	322	292	3	2, 449	3	9	658	50	35
Mississippi.....	3	29	3, 328	1, 614	79	504	0	36	104	18
<b>May, 1932</b>										
Nebraska.....	1	55	-----	-----	13	-----	0	75	58	2
New Mexico.....	-----	29	35	1	135	-----	0	53	3	9
North Dakota.....	1	33	1	-----	213	-----	2	24	9	-----

#### March, 1932

	Cases		Cases
Hawaii Territory:		Hawaii Territory—Contd.	
Chicken pox.....	60	Impetigo contagiosa.....	1
Conjunctivitis, follicular.....	23	Leprosy.....	4
Dysentery, bacillary.....	2	Mumps.....	4
Erysipelas.....	4	Plague.....	1
Hookworm disease.....	73	Whooping cough.....	7



<i>April, 1932</i>			
	Cases		Cases
Actinomycosis:		Trachoma:	
California.....	2	California.....	21
Chicken pox:		Mississippi.....	2
California.....	3,722	Trichinosis:	
Mississippi.....	594	California.....	1
Dengue:		Tularaemia:	
California.....	1	Mississippi.....	1
Mississippi.....	2	Undulant fever:	
Dysentery:		California.....	10
California (amebic).....	10	Mississippi.....	1
California (bacillary).....	8	Whooping cough:	
Mississippi (amebic).....	38	California.....	1,637
Food poisoning:		Mississippi.....	763
California.....	24		
German measles:		<i>May, 1932</i>	
California.....	66	Chicken pox:	
Granuloma, oocoidiodal:		Nebraska.....	123
California.....	2	New Mexico.....	71
Hookworm disease:		North Dakota.....	110
California.....	1	Conjunctivitis:	
Jaundice:		New Mexico.....	2
California.....	4	Dysentery:	
Leprosy:		New Mexico.....	2
California.....	1	Food poisoning:	
Lethargic encephalitis:		New Mexico.....	6
California.....	4	German measles:	
Mumps:		New Mexico.....	2
California.....	883	Lethargic encephalitis:	
Mississippi.....	248	North Dakota.....	1
Ophthalmia neonatorum:		Mumps:	
California.....	2	Nebraska.....	99
Mississippi.....	7	New Mexico.....	32
Paratyphoid fever:		North Dakota.....	24
California.....	5	Paratyphoid fever:	
Psittacosis:		New Mexico.....	1
California.....	3	Puerperal septicemia:	
Puerperal septicemia:		New Mexico.....	2
Mississippi.....	32	Septic sore throat:	
Rabies in animals:		New Mexico.....	2
California.....	44	North Dakota.....	1
Mississippi.....	7	Trachoma:	
Septic sore throat:		North Dakota.....	4
California.....	4	Vincent's angina:	
Tetanus:		North Dakota.....	20
California.....	7	Whooping cough:	
		Nebraska.....	55
		New Mexico.....	41
		North Dakota.....	22

#### ADMISSIONS TO HOSPITALS FOR THE INSANE, NOVEMBER, 1930

Reports for the month of November, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 116 hospitals, located in 37 States, the District of Columbia, and the Territory of Hawaii. The 116 hospitals had 177,665 patients on November 30, 1930, 94,485 males and 83,180 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of November, 1930, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	10	0	10
2. Senile psychoses.....	135	85	220
3. Psychoses with cerebral arteriosclerosis.....	181	84	265
4. General paralysis.....	170	50	220
5. Psychoses with cerebral syphilis.....	25	13	38
6. Psychoses with Huntington's chorea.....	3	0	3
7. Psychoses with brain tumor.....	2	0	2
8. Psychoses with other brain or nervous disease.....	22	11	33
9. Alcoholic psychoses.....	137	10	147
10. Psychoses due to drugs and other exogenous toxins.....	7	2	9
11. Psychoses with pellagra.....	4	17	21
12. Psychoses with other somatic diseases.....	26	24	50
13. Manic-depressive psychoses.....	185	247	432
14. Involution melancholia.....	15	37	52
15. Dementia praecox (schizophrenia).....	318	245	563
16. Paranoia and paranoid conditions.....	32	26	58
17. Epileptic psychoses.....	31	16	50
18. Psychoneuroses and neuroses.....	15	36	51
19. Psychoses with psychopathic personality.....	17	7	24
20. Psychoses with mental deficiency.....	64	27	91
21. Undiagnosed psychoses.....	89	58	147
22. Without psychoses.....	156	52	208
Total.....	1,677	1,057	2,734

During the month of November, 1930, there were 2,734 new admissions to the hospitals, 61.3 per cent of these new admissions being males and 38.7 per cent females. Three hundred and eighty-five of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,349 new admissions for whom provisional diagnoses were made. Of these 2,349 patients, cases of dementia praecox constituted 24.0 per cent; manic-depressive psychoses, 18.4 per cent; psychoses with cerebral arteriosclerosis, 11.3 per cent; senile psychoses, 9.4 per cent; and general paralysis, 9.4 per cent. These five classes accounted for 1,700 cases, or 72.4 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on November 30, 1930:

	Male	Female	Total
Patients on books last day of month:			
In hospitals.....	85,805	75,737	161,542
On parole or otherwise absent, but still on books.....	8,680	7,443	16,123
Total.....	94,485	83,180	177,665

Of the 177,665 patients, 8,680 males and 7,443 females were on parole or otherwise absent but still on the books on November 30, 1930, 9.2 per cent of the males, 8.9 per cent of the females, and 9.1 per cent of the total number of patients.

## GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,960,000. The estimated population of the 89 cities reporting deaths is more than 32,405,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended May 28, 1932, and May 30, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	646	765	
96 cities.....	311	378	693
Measles			
45 States.....	17,590	18,739	
96 cities.....	6,641	7,182	
Meningococcus meningitis			
46 States.....	47	99	
96 cities.....	17	51	
Pollomyelitis			
46 States.....	26	23	
Scarlet fever:			
46 States.....	4,713	4,571	
96 cities.....	2,579	1,953	1,289
Smallpox			
46 States.....	232	752	
96 cities.....	31	99	53
Typhoid fever:			
46 States.....	237	208	
96 cities.....	49	44	39
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	565	656	
Smallpox:			
89 cities.....	0	0	

*City reports for week ended May 28, 1932*

The "estimated expectancy" given for diphtheria, pollomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland.....	3	0	0	-----	0	4	1	1
New Hampshire:								
Concord.....	0	0	0	-----	0	3	0	1
Manchester.....	0	0	0	-----	0	0	0	1
Nashua.....	0	0	0	-----	0	0	2	0

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—CON.								
Vermont.								
Barre.....	0	0	1	-----	0	0	0	0
Burlington.....	0	0	0	-----	0	0	2	0
Massachusetts.								
Boston.....	46	26	19	2	0	200	93	26
Fall River.....	6	2	1	-----	0	53	2	3
Springfield.....	17	2	0	-----	0	222	11	0
Worcester.....	18	2	0	-----	0	32	19	3
Rhode Island								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	5	5	2	-----	0	26	3	4
Connecticut								
Bridgeport ..	2	4	0	-----	0	27	0	2
Hartford.....	5	3	0	2	0	4	10	2
New Haven....	25	1	0	-----	0	3	27	0
MIDDLE ATLANTIC								
New York:								
Buffalo.....	23	8	3	-----	1	48	1	11
New York.....	368	229	86	13	3	632	252	138
Rochester ..	11	3	0	-----	0	22	6	6
Syracuse.....	16	1	0	-----	0	343	9	4
New Jersey:								
Camden.....	5	5	0	-----	0	1	0	0
Newark.....	71	13	1	1	1	167	241	10
Trenton.....	8	2	3	-----	0	3	2	2
Pennsylvania:								
Philadelphia ..	128	56	2	5	3	8	78	19
Pittsburgh....	61	15	3	-----	2	132	27	30
Reading.....	2	0	0	-----	0	5	0	0
EAST NORTH CENTRAL								
Ohio								
Cincinnati.....	9	4	1	-----	2	1	0	7
Cleveland.....	70	21	2	7	1	647	68	10
Columbus.....	7	4	6	-----	0	62	1	5
Toledo.....	30	3	0	2	2	103	0	4
Indiana:								
Fort Wayne....	2	1	8	-----	0	3	0	3
Indianapolis...	45	2	2	-----	0	18	137	13
South Bend....	13	0	1	-----	0	2	0	2
Terre Haute....	2	0	0	-----	0	74	0	2
Illinois:								
Chicago.....	147	77	29	1	5	478	14	29
Springfield....	6	0	0	-----	0	0	4	2
Michigan:								
Detroit.....	101	38	10	3	0	1,211	64	28
Flint.....	9	1	0	11	1	95	24	0
Grand Rapids ..	5	0	0	-----	0	31	13	2
Wisconsin:								
Kenosha.....	5	0	1	-----	0	270	0	0
Madison.....	4	0	0	-----	0	1	1	-----
Milwaukee.....	101	11	1	1	1	952	22	7
Racine.....	12	0	0	-----	0	150	34	0
Superior.....	0	0	0	-----	0	0	5	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	13	0	0	-----	0	0	2	1
Minneapolis...	20	10	3	-----	0	19	71	7
St. Paul.....	25	7	0	-----	0	4	38	3
Iowa:								
Davenport.....	0	0	0	-----	0	0	0	-----
Des Moines....	2	0	4	-----	0	0	0	-----
Sioux City.....	6	1	0	-----	0	1	3	-----
Waterloo.....	6	0	0	-----	0	0	3	-----
Missouri:								
Kansas City....	16	2	3	-----	0	12	28	8
St. Joseph.....	3	0	2	-----	0	0	0	3
St. Louis.....	32	30	13	1	8	9	9	7

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CEN- TRAL--continued								
North Dakota:								
Fargo.....	16	0	0	-----	0	13	0	1
Grand Forks.....	0	0	0	-----	-----	50	0	-----
South Dakota:								
Aberdeen.....	3	0	0	-----	-----	3	0	-----
Nebraska:								
Omaha.....	9	2	12	-----	0	1	2	2
Kansas:								
Topeka.....	52	0	1	-----	1	21	4	1
Wichita.....	4	1	1	-----	0	14	5	3
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	1	0	-----	0	1	2	1
Maryland:								
Baltimore.....	119	17	3	2	0	5	135	21
Cumberland.....	1	0	1	-----	0	15	0	0
Frederick.....	0	0	1	-----	0	1	0	0
District of Columbia								
Washington.....	40	9	3	3	2	18	0	11
Virginia:								
Lynchburg.....	3	0	0	-----	0	1	0	0
Norfolk.....	1	0	0	-----	0	27	2	2
Richmond.....	2	1	1	-----	1	0	0	3
Roanoke.....	1	0	0	-----	0	0	0	1
West Virginia:								
Charleston.....	0	0	1	-----	0	15	0	1
Huntington.....	0	-----	0	-----	0	6	0	0
Wheeling.....	2	0	0	-----	0	37	0	3
North Carolina:								
Raleigh.....	1	0	0	-----	0	1	0	0
Wilmington.....	0	0	0	-----	0	0	0	0
Winston-Salem.....	7	0	0	-----	0	83	2	2
South Carolina:								
Charleston.....	1	0	0	7	1	0	0	2
Columbia.....	4	0	0	-----	0	63	0	5
Greenville.....	0	0	0	-----	0	19	0	0
Georgia:								
Atlanta.....	7	2	2	10	2	2	0	7
Brunswick.....	0	0	0	-----	0	0	0	1
Savannah.....	2	1	0	31	0	8	0	1
Florida:								
Miami.....	0	1	1	-----	0	0	0	2
Tampa.....	2	0	1	1	1	0	1	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington.....	-----	0	-----	-----	-----	-----	-----	-----
Lexington.....	2	-----	0	-----	0	1	1	1
Tennessee:								
Memphis.....	3	1	0	-----	0	-----	0	2
Nashville.....	0	0	1	-----	0	0	0	4
Alabama:								
Birmingham.....	4	1	0	-----	2	1	7	2
Mobile.....	0	1	0	-----	0	1	0	1
Montgomery.....	1	0	0	-----	-----	0	0	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	-----	-----	0	0	-----
Little Rock.....	0	0	1	-----	0	0	0	0
Louisiana:								
New Orleans.....	0	8	26	1	0	0	0	5
Shreveport.....	0	0	0	-----	0	6	10	0
Oklahoma:								
Oklahoma City.....	0	1	1	2	1	5	0	2
Texas:								
Dallas.....	3	3	8	-----	0	-----	0	5
Fort Worth.....	4	1	2	-----	0	1	0	0
Galveston.....	0	0	1	-----	0	0	0	1
Houston.....	0	3	5	-----	0	5	0	6
San Antonio.....	0	1	0	1	1	1	0	4

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported		
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported					
MOUNTAIN										
Montana:										
Billings.....	0	0	0	-----	0	0	0	0		
Great Falls.....	0	0	0	-----	0	1	0	0		
Helena.....	5	0	0	-----	0	0	0	0		
Missoula.....	1	0	0	-----	0	0	0	0		
Idaho:										
Boise.....	0	0	1	-----	0	2	0	1		
Colorado:										
Denver.....	37	6	3	-----	0	60	50	9		
Pueblo.....	16	0	0	-----	0	0	0	0		
New Mexico:										
Albuquerque.....	6	0	0	-----	0	17	5	0		
Arizona:										
Phoenix.....	2	0	0	-----	0	0	0	0		
Utah:										
Salt Lake City.....	65	2	0	-----	0	0	28	2		
Nevada:										
Reno.....		0	-----	-----	-----	-----	-----	-----		
PACIFIC										
Washington:										
Seattle.....	13	2	7	-----	-----	55	6	-----		
Spokane.....	19	3	0	-----	-----	22	0	-----		
Tacoma.....	2	1	2	-----	0	80	0	1		
Oregon:										
Portland.....	0	4	1	2	0	137	3	0		
Salem.....	1	0	0	-----	0	2	4	0		
California:										
Los Angeles.....	140	26	25	27	0	17	17	10		
Sacramento.....	43	3	0	-----	0	5	1	2		
San Francisco.....	67	11	1	3	2	214	4	9		
Division, State, and city	Scarlet fever		Smallpox		Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND										
Maine:										
Portland.....	3	2	0	0	0	1	0	0	5	25
New Hampshire:										
Concord.....	0	4	0	0	0	1	0	0	0	17
Manchester.....	0	0	0	0	0	2	0	0	0	21
Nashua.....	1	3	0	0	0	0	0	0	0	0
Vermont:										
Barre.....	0	0	0	0	0	0	0	0	0	3
Burlington.....	0	0	0	0	0	0	0	0	1	11
Massachusetts:										
Boston.....	70	138	0	0	0	22	2	0	36	237
Fall River.....	4	16	0	0	0	1	0	0	0	22
Springfield.....	9	6	0	0	0	2	0	0	5	33
Worcester.....	10	35	0	0	0	1	0	0	0	41
Rhode Island:										
Pawtucket.....	3	0	0	0	0	0	0	0	0	14
Providence.....	11	36	0	0	0	4	1	0	7	55
Connecticut:										
Bridgeport.....	7	6	0	0	0	3	0	0	0	38
Hartford.....	4	7	0	0	0	0	1	0	2	30
New Haven.....	4	19	0	0	0	2	0	0	14	36
MIDDLE ATLANTIC										
New York:										
Buffalo.....	24	71	0	1	0	12	0	1	15	163
New York.....	253	776	0	0	0	102	9	6	162	1,453
Rochester.....	10	58	0	0	0	0	1	1	7	66
Syracuse.....	10	19	0	0	0	1	0	0	71	47

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-ported	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
MIDDLE ATLANTIC—CON.											
New Jersey											
Camden	5	43	0	0	0	2	1	0	0	0	39
Newark	25	34	0	0	0	4	0	0	0	20	83
Trenton	4	6	0	0	0	3	0	0	0	7	38
Pennsylvania											
Philadelphia	91	182	0	0	0	22	2	0	0	105	456
Pittsburgh	30	69	0	0	0	7	0	0	0	27	160
Reading	4	21	0	0	0	1	0	0	0	12	28
EAST NORTH CENTRAL											
Ohio											
Cincinnati	18	39	2	0	0	12	0	0	0	3	115
Cleveland	44	113	0	0	0	11	1	1	0	97	187
Columbus	7	6	1	0	0	3	0	0	0	7	83
Toledo	11	10	0	0	0	5	0	0	0	40	68
Indiana											
Fort Wayne	4	7	2	0	0	2	0	0	0	5	28
Indianapolis	15	3	8	0	0	5	0	1	1	48	
South Bend	5	4	1	0	0	1	0	0	0	6	11
Terre Haute	1	0	1	0	0	0	0	0	0	0	15
Illinois											
Chicago	120	204	2	0	0	45	3	0	0	77	644
Springfield	4	6	0	0	0	1	0	8	0	0	11
Michigan											
Detroit	112	294	0	0	0	31	1	3	0	187	274
Flint	12	9	1	0	0	0	0	0	0	14	20
Grand Rapids	10	5	0	0	0	1	0	0	0	5	23
Wisconsin											
Kenosha	1	2	0	0	0	0	0	0	0	1	9
Madison	3	1	0	0	0	0	0	0	0	29	
Milwaukee	29	26	0	0	0	3	1	1	0	92	90
Racine	5	0	0	0	0	0	0	0	0	0	10
Superior	3	0	0	0	0	0	0	0	0	3	7
WEST NORTH CENTRAL											
Minnesota											
Duluth	7	1	0	0	0	0	0	0	0	0	21
Minneapolis	28	41	0	1	0	4	0	1	0	26	77
St. Paul	17	16	0	0	0	0	0	0	0	28	42
Iowa											
Davenport	1	6	5	1			0	0		0	
Des Moines	5	6	2	0			0	0		0	25
Sioux City	1	1	0	4			0	0		1	
Waterloo	3	0	0	0			0	0		0	
Missouri											
Kansas City	13	17	0	0	0	6	1	0	0	17	95
St. Joseph	2	0	0	0	0	0	0	0	0	0	16
St. Louis	59	12	2	0	0	8	1	0	0	20	213
North Dakota											
Fargo	2	0	0	0	0	1	0	0	0	0	9
Grand Forks	0	0	0	0			0	0		0	
South Dakota											
Aborted	1	0	0	0			0	0		1	
Nebraska											
Omaha	4	3	5	7	0	1	0	0	0	2	35
Kansas											
Topeka	3	1	1	0	0	0	0	0	0	75	14
Wichita	2	0	0	0	0	0	0	0	0	3	31
SOUTH ATLANTIC											
Delaware											
Wilmington	3	3	0	0	0	0	0	0	0	0	34
Maryland											
Baltimore	37	48	0	0	0	16	2	1	0	88	199
Cumberland	0	1	0	0	0	0	0	1	0	0	16
Frederick	0	1	0	0	0	0	0	0	0	0	3
Dist. of Columbia											
Washington	21	17	0	0	0	10	1	0	0	29	156

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- cul- osis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
SOUTH ATLANTIC— continued											
Virginia:											
Lynchburg.....	0	4	0	0	0	1	0	0	0	30	7
Norfolk.....	1	2	0	0	0	2	1	0	0	14	25
Richmond.....	3	1	0	0	0	5	0	0	0	15	45
Roanoke.....	0	7	0	0	0	3	0	0	0	9	21
West Virginia:											
Charleston.....	0	1	1	0	0	0	0	0	0	1	7
Huntington.....		0		0	0	0		0	0	0	
Wheeling.....	1	3	0	0	0	1	0	0	0	5	16
North Carolina:											
Raleigh.....	0	0	0	0	0	1	0	0	0	2	16
Wilmington.....	0	0	0	0	0	0	0	0	0	18	8
Winston-Salem.....	0	8	0	1	0	3	0	0	0	34	17
South Carolina:											
Charleston.....	0	0	0	0	0	5	0	0	0	0	20
Columbia.....	0	0	0	0	0	0	1	0	0	1	37
Greenville.....	0	0	0	0	0	0	0	0	0	1	
Georgia:											
Atlanta.....	5	2	3	0	0	7	1	1	1	7	70
Brunswick.....	0	0	0	0	0	0	0	2	1	0	7
Savannah.....	0	2	0	0	0	1	1	3	1	4	16
Florida:											
Miami.....	0	0	0	0	0	0	0	0	0	1	16
Tampa.....	0	1	0	0	0	0	0	1	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	1		1				0				
Lexington.....		0		0	0	0		0	0	3	14
Tennessee:											
Memphis.....	7	5	0	2	0	3	2	1	1	19	68
Nashville.....	2	2	1	0	0	5	0	0	0	9	46
Alabama:											
Birmingham.....	1	1	1	0	0	1	0	3	0	11	50
Mobile.....	0	0	0	4	0	1	0	1	0	0	11
Montgomery.....	0	1	0	0			0	0		0	
WEST SOUTH CEN- TRAL											
Arkansas:											
Fort Smith.....	0	1	0	0			0	0		0	
Little Rock.....	1	0	1	0	0	2	0	0	0	1	2
Louisiana:											
New Orleans.....	8	9	0	0	0	11	2	1	0	1	134
Shreveport.....	1	0	0	0	0	2	0	0	0	7	30
Oklahoma:											
Oklahoma City.....	2	3	2	1	0	3	1	1	1	0	44
Texas:											
Dallas.....	3	5	1	0	0	5	1	0	0	10	50
Fort Worth.....	2	3	3	1	0	3	0	0	0	0	27
Galveston.....	0	0	0	0	0	1	0	0	0	0	15
Houston.....	3	1	2	0	0	5	0	0	0	0	66
San Antonio.....	0	0	0	0	0	2	0	0	0	0	71
MOUNTAIN											
Montana:											
Billings.....	0	0	0	0	0	0	0	0	0	0	5
Great Falls.....	1	2	0	0	0	0	0	0	0	2	4
Helena.....	0	0	0	0	0	0	0	0	0	0	5
Missoula.....	0	1	0	0	0	0	0	0	0	0	5
Idaho:											
Boise.....	0	0	0	0	0	0	0	0	0	0	8
Colorado:											
Denver.....	11	14	0	0	0	10	0	1	0	24	86
Pueblo.....	0	1	0	0	0	0	1	0	0	4	7
New Mexico:											
Albuquerque.....	0	1	0	0	0	5	0	0	0	4	10



## City reports for week ended May 28, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
MOUNTAIN—con.											
Arizona:											
Phoenix	0	0	1	0	0	2	0	0	0	0	
Utah:											
Salt Lake City	3	3	1	0	0	0	0	0	0	5	29
Nevada:											
Reno	0		0				0				
PACIFIC											
Washington:											
Seattle	8	9	1	2			0	3		2	
Spokane	4	1	6	0			0	0		0	
Tacoma	4	0	3	0	0	1	0	0	0	0	33
Oregon:											
Portland	3	2	8	2	0	1	0	0	0	5	57
Salem	1	1	0	0	0	0	0	0	0	0	
California:											
Los Angeles	28	56	5	8	0	15	1	2	0	80	293
Sacramento	2	3	1	0	0	4	1	3	0	0	
San Francisco	20	7	0	1	0	14	0	2	0	16	175

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Polymyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
Massachusetts:									
Boston	1	1	0	0	0	0	1	0	0
Worcester	0	0	0	0	1	0	0	0	0
Rhode Island:									
Providence	0	0	0	0	0	0	0	1	0
<b>MIDDLE ATLANTIC</b>									
New York:									
New York	4	0	0	0	0	0	1	2	0
Pennsylvania:									
Philadelphia	4	1	0	0	0	0	0	0	0
Pittsburgh	0	1	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Toledo	1	1	0	0	0	0	0	0	0
Indiana:									
Indianapolis	2	0	0	0	0	0	0	0	0
Illinois:									
Chicago	2	1	0	0	0	0	0	0	0
Michigan:									
Detroit	1	2	0	0	0	0	0	0	1
Flint	0	1	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
St. Paul	1	0	0	1	0	0	0	0	0

## City reports for week ended May 28, 1932—Continued

Division, State, and city	Meningo-coccus meningitis		Lethargic encephalitis		Pellagra		Polomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>SOUTH ATLANTIC</b>									
District of Columbia:									
Washington.....	0	1	0	0	0	0	0	0	0
North Carolina:									
Raleigh.....	0	1	0	0	0	0	0	0	0
Winston-Salem.....	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	0	1	0	0	0
Columbia.....	0	0	0	0	0	1	0	0	0
Georgia: <sup>1</sup>									
Atlanta.....	1	0	0	0	2	0	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Alabama:									
Birmingham.....	0	0	0	0	0	1	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	0	0	0	0	2	1	0	0	0
Texas:									
Galveston.....	0	1	0	0	0	0	0	0	0
Houston.....	0	1	0	0	0	0	0	0	0
San Antonio.....	0	0	0	0	0	0	0	2	1
<b>MOUNTAIN</b>									
Montana:									
Great Falls.....	0	0	0	0	0	0	0	1	0
Idaho:									
Boise.....	0	0	0	1	0	0	0	0	0
Utah:									
Salt Lake City.....	1	1	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Oregon:									
Portland.....	1	0	0	0	0	0	0	0	0
California:									
San Francisco.....	0	0	1	0	0	0	0	0	0

<sup>1</sup> Typhus fever, 1 case in Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 28, 1932, compared with those for a like period ended May 30, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

Summary of weekly reports from cities, April 24 to May 23, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931	May 28, 1932	May 30, 1931
98 cities.....	<sup>1</sup> 48	63	49	<sup>1</sup> 67	44	63	39	62	<sup>1</sup> 48	59
New England.....	21	36	34	38	48	38	41	48	55	50
Middle Atlantic.....	54	61	48	61	42	58	14	63	43	58
East North Central.....	33	84	33	82	32	72	36	67	36	81
West North Central.....	51	57	53	71	55	71	83	75	66	54
South Atlantic.....	43	69	45	63	29	55	33	38	25	42
East South Central.....	<sup>1</sup> 19	6	46	41	40	18	12	12	<sup>1</sup> 6	18
West South Central.....	79	68	89	108	92	81	96	81	135	54
Mountain.....	34	26	9	<sup>1</sup> 27	26	61	52	61	<sup>1</sup> 36	52
Pacific.....	80	53	97	61	69	74	86	73	67	37

## MEASLES CASE RATES

98 cities.....	<sup>1</sup> 1,141	1,250	1,226	<sup>1</sup> 1,305	1,157	1,403	1,137	1,373	<sup>1</sup> 1,022	1,115
New England.....	1,314	964	1,002	1,063	1,196	1,166	951	1,190	1,376	935
Middle Atlantic.....	475	1,411	478	1,434	487	1,486	534	1,479	557	1,184
East North Central.....	2,821	896	3,317	1,101	2,962	1,311	2,908	1,457	2,379	1,302
West North Central.....	411	777	243	1,016	254	1,397	188	1,088	176	611
South Atlantic.....	663	3,877	429	3,559	569	3,371	498	2,845	490	2,008
East South Central.....	<sup>1</sup> 6	1,439	0	1,275	12	1,245	6	1,245	<sup>1</sup> 12	1,057
West South Central.....	43	156	40	152	30	166	46	271	40	294
Mountain.....	1,269	661	810	<sup>1</sup> 555	1,099	531	814	618	<sup>1</sup> 562	461
Pacific.....	866	506	883	502	763	555	664	457	748	492

## SCARLET FEVER CASE RATES

98 cities.....	<sup>1</sup> 494	372	444	<sup>1</sup> 390	437	380	384	368	<sup>1</sup> 397	308
New England.....	971	582	678	630	647	696	693	536	645	351
Middle Atlantic.....	774	409	706	448	709	439	570	442	566	305
East North Central.....	436	402	397	438	385	453	351	412	428	437
West North Central.....	222	40	182	440	195	383	188	341	174	291
South Atlantic.....	359	273	265	277	243	243	203	241	194	239
East South Central.....	<sup>1</sup> 50	411	52	253	17	341	17	394	<sup>1</sup> 56	300
West South Central.....	43	152	43	105	23	190	49	85	53	51
Mountain.....	190	191	155	<sup>1</sup> 170	147	157	148	270	<sup>1</sup> 187	165
Pacific.....	129	94	145	108	135	123	162	88	145	110

## SMALLPOX CASE RATES

98 cities.....	<sup>1</sup> 4	23	8	<sup>1</sup> 15	8	17	7	16	<sup>1</sup> 5	15
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	1	0	3	0	1	0	4	0	1
East North Central.....	3	10	0	6	4	23	3	15	0	11
West North Central.....	8	115	13	78	21	75	23	67	23	88
South Atlantic.....	0	6	0	8	0	6	0	6	2	24
East South Central.....	<sup>1</sup> 62	59	64	41	17	12	35	41	<sup>1</sup> 37	6
West South Central.....	0	102	7	64	7	41	20	47	0	37
Mountain.....	0	0	138	<sup>1</sup> 9	17	17	61	9	<sup>1</sup> 0	26
Pacific.....	15	51	25	12	11	25	17	12	21	12

See footnotes at end of table.

*Summary of weekly reports from cities, April 24 to May 28, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931—Continued*

## TYPHOID FEVER CASE RATES

	Week ended—									
	Apr. 30, 1932	May 2, 1931	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931	May 28, 1932	May 30, 1931
98 cities .....	17	6	5	15	6	5	8	6	18	7
New England .....	12	7	0	5	12	5	10	2	0	2
Middle Atlantic .....	5	7	6	5	4	5	5	5	4	8
East North Central .....	3	4	3	2	2	2	4	5	8	2
West North Central .....	4	4	0	2	9	6	9	10	2	4
South Atlantic .....	18	14	10	8	8	12	25	12	18	22
East South Central .....	12	12	17	6	0	18	6	18	131	12
West South Central .....	26	0	10	7	16	7	10	7	3	7
Mountain .....	0	0	0	10	9	0	9	0	19	17
Pacific .....	6	6	0	8	4	0	10	8	19	2

## INFLUENZA DEATH RATES

	14	11	10	12	9	8	7	7	15	7
91 cities .....	14	11	10	12	9	8	7	7	15	7
New England .....	9	7	2	5	7	2	0	5	0	10
Middle Atlantic .....	8	12	8	11	9	7	7	5	4	8
East North Central .....	13	5	5	11	8	5	5	5	6	5
West North Central .....	15	12	12	6	6	9	20	3	3	9
South Atlantic .....	27	20	24	22	8	16	6	4	14	18
East South Central .....	14	19	50	51	44	51	6	19	14	19
West South Central .....	40	38	10	14	7	7	24	28	3	14
Mountain .....	43	26	34	27	9	9	0	26	10	17
Pacific .....	7	2	5	7	7	7	0	0	5	6

## PNEUMONIA DEATH RATES

	104	122	108	117	103	102	98	95	86	101
91 cities .....	104	122	108	117	103	102	98	95	86	101
New England .....	187	154	129	130	98	113	125	72	101	111
Middle Atlantic .....	115	141	130	114	130	121	109	121	97	109
East North Central .....	78	76	91	87	91	73	86	68	66	75
West North Central .....	145	180	79	121	102	109	105	97	105	133
South Atlantic .....	141	180	131	131	120	127	102	111	116	133
East South Central .....	130	121	75	121	63	127	75	121	61	185
West South Central .....	87	112	128	114	57	114	77	97	71	128
Mountain .....	95	61	86	98	69	78	131	70	107	70
Pacific .....	30	46	67	70	53	55	46	55	51	43

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Columbia, Ky., not included.

<sup>3</sup> Billings, Mont., not included.

<sup>4</sup> Cincinnati, Ky., and Reno, Nev., not included.

<sup>5</sup> Reno, Nev., not included.

## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended May 21, 1932.*—Cases of certain communicable diseases reported for the week ended May 21, 1932, by the Department of Pensions and National Health of Canada are given in the table below. Provinces not included in the table did not report any case of any disease included in the table.

Disease	Quebec	Ontario	Manitoba	Saskatchewan	Total
Cerebrospinal fever.....		2			2
Influenza.....		1			1
Smallpox.....				3	3
Typhoid fever.....	16	6	2	1	25

*Quebec Province—Communicable diseases—Week ended May 21, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 21, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	47	Scarlet fever.....	92
Diphtheria.....	19	Tuberculosis.....	58
Erysipelas.....	7	Typhoid fever.....	16
German measles.....	19	Whooping cough.....	15
Measles.....	187		

### CUBA

*Habana—Communicable diseases—Four weeks ended May 21, 1932.*—During the four weeks ended May 21, 1932, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis.....	1	1	Measles.....	7	1
Chicken pox.....	1		Scarlet fever.....	4	
Diphtheria.....	12	3	Tuberculosis.....	23	7
Malaria.....	8		Typhoid fever.....	4	8

## JAMAICA

*Communicable diseases—Four weeks ended May 21, 1932.*—During the four weeks ended May 21, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica, outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis.....	1	-----	Lethargic encephalitis.....	-----	1
Chicken pox.....	15	62	Paratyphoid fever.....	-----	1
Diphtheria.....	1	1	Puerperal fever.....	-----	2
Dysentery.....	3	3	Tuberculosis.....	42	83
Erysipelas.....	1	1	Typhoid fever.....	22	69
Leprosy.....	-----	3			

## SIERRA LEONE

*Smallpox.*—During the period from March 6 to April 1, 1932, 159 cases of smallpox, with 5 deaths, were reported in Sierra Leone. One hundred and one cases, with 1 death, were reported from April 3 to 16. In February, 9 cases of smallpox were reported, 3 of which occurred in Freetown. The yearly number of cases of smallpox reported had not exceeded 20 since 1926 until the present outbreak. Twelve cases were reported in 1929, 1 imported case in 1930, and 7 cases in 1931.



Indo-China (see also table below):

Place	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	February, 1932			March, 1932			April, 1932		
					1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-30
Indo-China (French) (see also table above)													
Annam <sup>1</sup>	C				4								
Cambodia <sup>1</sup>	D	4	3	12	3	2		6	1	3	4	1	20
	D	19	2	6	3	2		3	1	1	3	6	8
	D	18	2	6	2	2		3	1	1	3	6	18
Cochin-China <sup>1</sup>	C	6	14	5	7		P	3	2	4	2	3	13
	D	14	14	5	7			2	1	2	7	3	13
	D	13	7	4	5			2	1	1	2	3	13
Laos <sup>1</sup>	C	4	7	4									
	D												
Indo-China (French) (see also table above)													
Annam <sup>1</sup>	C				4								
Cambodia <sup>1</sup>	D	4	3	12	3	2		6	1	3	4	1	20
	D	19	2	6	3	2		3	1	1	3	6	8
	D	18	2	6	2	2		3	1	1	3	6	18
Cochin-China <sup>1</sup>	C	6	14	5	7		P	3	2	4	2	3	13
	D	14	14	5	7			2	1	2	7	3	13
	D	13	7	4	5			2	1	1	2	3	13
Laos <sup>1</sup>	C	4	7	4									
	D												
Indo-China (French) (see also table above)													
Annam <sup>1</sup>	C				4								
Cambodia <sup>1</sup>	D	4	3	12	3	2		6	1	3	4	1	20
	D	19	2	6	3	2		3	1	1	3	6	8
	D	18	2	6	2	2		3	1	1	3	6	18
Cochin-China <sup>1</sup>	C	6	14	5	7		P	3	2	4	2	3	13
	D	14	14	5	7			2	1	2	7	3	13
	D	13	7	4	5			2	1	1	2	3	13
Laos <sup>1</sup>	C	4	7	4									
	D												

<sup>1</sup> A suspected case.<sup>1</sup> Figures for cholera in the Philippine Islands are subject to correction.<sup>1</sup> Reports incomplete.



## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE<sup>1</sup>

[C indicates cases; D, deaths; P, present]

Place	Nov. 13, 15- Dec. 12, 1931	Dec. 13, 15- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended—															
				February, 1932				March, 1932				April, 1932				May, 1932			
				13	20	27		5	12	19	26	2	9	16	23	30	7	14	21
Argentina: Cordoba Province <sup>1</sup> .....	C	1	1																
Azores:.....																			
San Miguel Island.....	C	5																	
Tercera Island.....	D	1																	
Belgian Congo.....	D	16																	
British East Africa (see also table below):	C	6																	
Tanganyika.....	C	1																	
Uganda.....	C																		
Canary Islands: Palma Island—Los Llanos.....	D	145	63	10															
	D	138	62	26	7	1													
	D				5	1													
Ceylon: Colombo.....	D		8																
	D	1	4	5	1	1		2	1	1	1	1	1	1	1	1	1	1	1
Plague-infected rats.....	D	1	4	3	1	1		1	1	1	1	1	1	1	1	1	1	1	1
China: Kwang Chow Wan.....	C	1	1	1															
Shensi Province.....	D																		
Dutch East Indies:	C																		
Java—				P															
Surabaya.....	C		2																
Tegal.....	D		2																
Java and Madura.....	D	702	587	499	118	116	1												
West Java.....	D	196	203	201	60	14	18	117	98	79	89	96	98	98	52	55			
Ecuador (see table below).	C	196	253	200	59	14	17	49	55	40	51	67	68	68	52	54			
Egypt:																			
Alexandria.....	C	3		2				1	1								1	2	1
Asiout.....	D	3																2	
Bebeira.....	D	1	2	1															
	D	1	2	1															
Beni Suef.....	D			11															
	D			2															
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## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932	April, 1932	Place	Octo-ber, 1931	No-ven-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ru-ary, 1932	March, 1932	April, 1932
British East Africa (see also table above): Kenya.....	64	44	41	17	33	22	12	Peru—Continued.							
Ecuador:								Department—Continued.							
Province—								Cajamarca.....	C	14					
Chimborazo.....	2	8		8	13			Libertad.....	D	5					
Loja.....	11	2		11				Oturoco.....	C	2		1			28
Indo-China.....	3		9	17	P	P	9	Lima.....	C	9		6		1	
Madagascar (see also table above):	1		5	9			6		D	4					
Province—								Plague-infected rats.		1					
Ambatolampy.....								Lima.....	C	1					
				23	40			Piura.....	D	1			1		
Ambesitra.....	8	30		23	38				D	7		1			
Antsirabe.....	5	37	142	166	90			Snegal							
Maevatanana.....	17	27	121	152	81			Baol.....	C	6					
	17	27	51	53	45			Dakar.....	D	2					
	4	4		51	45				D	4				10	
Miatinarivo.....	18	10	14	15	13			Diourbel.....	D	4				5	
Moramanga.....	16	9	14	15	12			Louga.....	D	10					
	13	25	30	13	9			Rufisque.....	D	5					
Tananarive.....	11	25	29	13	9				D	19					
	120	196	248	203	145			Thies.....	D	10					
	117	178	241	196	140				D	12					
Peru.....	8	27	21	11	2				D	7					
	7	11	9	8	2			Yombel.....	D	16					
Department—									D	7					
Canete.....									D	5					
				3					D					9	

\* Reports incomplete.

## SMALLPOX

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 10- Jan. 7, 1932	Jan. 8- Feb. 6, 1932	Week ended—													
				February, 1932				March, 1932				April, 1932				May, 1932	
				13	20	27	5	12	19	26	2	9	16	23	30	7	14
Aden.....			2						1								
Algeria.....																	
Constantine Department.....		1											1			1	
Philippville.....															1		
Southern Territories.....				2													
Brazil:																	
Porto Alegre (alastim).....	51	35	34	12		8	4	3	1	1	1	2	1				
Rio de Janeiro.....	1	2															
Santo.....																	
British East Africa: Tanganyika.....	2	55	24		4	1	1										
British South Africa:			7														
Northern Rhodesia.....		7	5														
Southern Rhodesia.....		1									4	1	6				
Canada:																	
Alberta.....	3	11															
British Columbia.....	2	2	18	8	10	4	3	7		2	1						
Manitoba.....			10										1				
Nova Scotia.....	1					1											
Ontario.....	11	14	6	4	16		1	1			3		2	4		1	
North Bay.....			1														
Toronto.....	1	3	1														
Quebec.....			35														
Saskatchewan.....	34	11	35		23		7	5			1		1	5	2	3	1
Chile: Tacopilla.....																	
China:																	
Amoy.....	46	218	183	35	34	30	22	15	12	8	10	7	5	4	1	3	
Canton.....	36	79	91	11	14	12	7	5	7	3	10	4	2	3	1	2	
Foochow.....	14	18	27	18	6	6	15	21	18	29	11	24	13	22	17	10	5
Hankow.....																	
Harbin.....	P	P	59			1	P	P	P	3	P	1	P	1	P	1	
Shanghai.....	20	47	59		2	1	1				2						
Tientsin.....	6	12	11	7	19	19	6	12	7	17	9	12	13	21	9	7	3
Hong Kong.....	1	6	6	2	9	9	3	7	6	7	8	2	6	6	6	7	3

123 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 13, 1932.

[illegible]





**JUNE 17, 1962**

**Syria (see table below).**

**Tumaisa: Tumaisa-**

**Turkey (see also table below): Istanbul.**

## Union of South Africa:

**Cape Province**.....

**Orange Free State.**

**Transvaal**

**On vessels:**

**Brazilian ship Jaboteao at New Orleans**

**from Brazil**.....

8. 8. Tacoma at Manila from Shanghai...

S. B. Cressington Court at Yokohama from

ST. C. CROSBYSON HILL COLUMBIA A CHRISTIAN IS OUI  
Shanghai-----

**S. S. Bollington Court at Yokohama from:**

**Shangbin**  
W. D. Brown & Co.

**8. B. Victoria City at Brisbane from Shenz-**

U. S. DEPARTMENT OF JUSTICE

**S. G. Bellasco at Mobile from Habana.**

**S. B. DENESS at MOORE FROM LAGOSIA,  
Cyba. and Holl. England**

**B. B. Fraumholtz of Brier from Coleridge**

**B. B. Facknmes at Quek from Cane...**  
**B. B. Facknmes at Quek from Cane...**  
**B. B. Facknmes at Quek from Cane...**  
**B. B. Facknmes at Quek from Cane...**

U. S. C. W. 1917-18

**S. S. President Jackson at Yokohama from**

**В. В. ГРЕБЕННИКОВ** и **Г. КОЛПАКОВА** из  
**San Francisco via Honolulu**

**S. S. HONG KHEZZ at Singapore from Amoy.**

**U. S. 1000 KNIGHTS AT SINGAPORE NOW KNOWN  
via Swatow and Hong Kong**

Dr. Hui Ning and a Solicitor at Hong Kong.

**Kong**  
**S. B. CHUNG AND S. B. CHUNG**

**S. B. Markara at Adan from Colombo**

B. B. Theadone at Hong Kong from Shang-

**ADULTS ONLY**

**S. S. Poasting at Shanghai**

8-2. Forwarding at Bangalore.-----  
8-3. Ratula at Pansang from Narasimam

B. B. Raju at Posing from Narsipatnam --  
S. B. MacGillivray at Sines from Bankoon

S. B. MacCullum at Subb from Rahoon.  
S. A. Taini at Southampton from New

**B. B. TAYLOR & SOUTHAMPTON IRON NEW ZEALAND**

-----  
copy now being furnished B  
0987

W. S. Greenbank at Suez from Aden  
W. S. Twanaja at Suez from Bombay

200 cases of smallpox were reported in Osaka Prefecture from Mar. 1 to May 24, 1932.

\* From Mar. 6 to Apr. 16, 1932, 260 cases of smallpox with 6 deaths, were reported in Sierra Leone.

**A suspected case.**





## TYPHUS FEVER

Place	Nov. 18- Dec. 18, 1931	Dec. 13 1931- Dec. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended--											
				February, 1932				March, 1932				April, 1932			
				13	20	27		5	12	19	26	2	9	16	23
Algeria:															
Algiers.....		4	1			3					7			8	9
Constantine Department.....	8	6	7							7					
Gerville.....	1			1											
Oran.....	4	22	44	1	29	36		12	10	12		15	6	15	9
Bulgaria.....		3	6		3	3		1	1	1		3	4	2	
Chile:															
Astorgues.....	8	1	1											3	
Santiago.....															
China:															
Hankow.....		4				2				1	3				
Peking.....															
Shanghai.....															
Chosen (see table below).															
Colombia: Cali.....				1											
Czechoslovakia (see table below).															
Egypt:															
Alexandria.....		6		1		63	7					46	5	2	7
Beheira.....		7													
Cairo.....	1			12											
Gharbiyah.....		1													
Provinces.....															
Greece (see table below).															
Irish Free State:															
Donegal County—Stranorlar.....															
Limerick County—Limerick.....															
Waterford County—Lismore.....															
Latvia (see table below).															
Lithuania (see table below).															
Mexico:															
Guadalajara.....		1													
Mexico City, including municipalities in Federal District.....	22	11	25	7	8	3		2	2	3	2		3	2	3
San Luis Potosi.....	4	6	9	1	4	3		4	2		2		1	2	
Marocco:															
	17	9	6	7	19	10		14	3	21		5	9	7	3
	2	1						6	2	4			1		7

**TYPHUS FEVER--Continued**

[C indicates cases; D, deaths; P, present]

[illegible]

## YELLOW FEVER

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Week ended—													
				February, 1932				March, 1932				April, 1932				May 7, 1932	
				13	20	27	5	12	19	26	2	9	16	23	30		
Brazil:																	
Bahia State.....	O		2														P
Esplanada.....	O																1
Ceara State.....	O																1
Espirito Santo State <sup>1</sup>	D																P
Santa Teresa (about 56 miles from Victoria)	D																
Dahomey: Porto Novo.....	D																
Gold Coast:																	
Avuduto.....	C																
Cape Coast.....	O																
Dagomba District.....	O	1							P								
Salaga.....	O	1															
Tamale.....	O	3															
Yapel.....	O																
Nigeria:	D	2															
Togo (French): Atakpame—Anie Circle.....	D	1															

<sup>1</sup> During the 3 weeks ended Apr. 30, 1932, a number of cases of suspected yellow fever were reported in the interior of the State.



UNITED STATES TREASURY DEPARTMENT

# PUBLIC HEALTH REPORTS

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## SPECIAL ARTICLE

Record of Acute Respiratory Disease in Michigan  
University Students, 1917-1931



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## UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

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# PUBLIC HEALTH REPORTS

VOL. 47

JUNE 24, 1932

No. 28

## ACUTE RESPIRATORY DISEASE IN UNIVERSITY OF MICHIGAN STUDENTS, 1917-1931

**Incidence of Cases Attended by University Physicians among Students at the  
University Health Service**

By WARREN E. FORSYTHE, M. D., Dr. P. H., *Director University Health Service,  
University of Michigan*

Student health services often have an unusual opportunity to determine facts relative to the phenomena of health and disease. Studies on acute respiratory conditions are typical of such opportunities, and the need for accurate data on the problem of colds is widely appreciated. The Hagerstown studies (1) show respiratory conditions to be responsible for more than half of all illness reported in a typical community, and in the University of Michigan student clinic they are responsible for over 25 per cent of all illnesses treated.

This study concerns the incidence of respiratory conditions as recorded in the student clinic at the University of Michigan. This clinic, which is free to all students, offers a high quality of medical service readily available for ambulatory, room, and hospital patients. Clinical diagnoses are an uncertain index of disease incidence, but these data would at least indicate the frequency with which intelligent young people seek easily obtainable medical service for respiratory illness.

The cases of minor respiratory illness treated at the health service clinic or by the university physicians in the students' quarters varied during the 14-year period 1917-1931 from 710 per 1,000 students enrolled in 1923-24 to 1,198 in 1930-31, with an average of 926 cases per 1,000 for the whole period. These rates are on the basis of a whole 12-month year, the computation being made from both the regular and the summer session rates. They represent the frequency with which service was obtained from the university physicians for any of the following diagnoses: Rhinitis, pharyngitis, naso-pharyngitis, tracheitis, tonsillitis, bronchitis, influenza, sinusitis, la grippe, laryngitis, pleurisy, and pneumonia.

The average annual rate of 926 respiratory conditions treated per 1,000 students entitled to the service may be compared with an annual rate of 657 cases per 1,000 persons of all ages as reported in bimonthly canvasses of families in the Hagerstown study (2) and of 493 per 1,000

persons 15-24 years of age in the same study. However, only 34 per cent of the respiratory cases in the Hagerstown study were attended by a physician, whereas all of the 926 cases per 1,000 in this study are attended cases, since no data are available on the cases that did not ask for treatment. The medical service was free, which was not true in Hagerstown. The rate of 926 clinic cases per 1,000 represents nearly twice the rate as reported for approximately the same age group (15-24 years) in bimonthly canvasses of families in Hagerstown (1).

Studies by the Public Health Service (3)(4) among students in 10 universities and colleges reporting at semimonthly intervals upon their own respiratory attacks, whether or not they were attended by a physician, indicated an average incidence for the 12-month period ending May 30, 1925, of 2,947 cases per 1,000 students, with a variation in the rates of 2,365 to 3,336 in the different schools. Only 13 per cent of such cases were attended by a physician.

A very intensive study conducted by the department of epidemiology of the Johns Hopkins School of Hygiene indicated an even higher case incidence for the minor respiratory conditions. (See also reference 5.)

The average annual rate of 926 minor respiratory cases attended by the university physicians for each 1,000 students enrolled can, therefore, be considered as including a considerably larger proportion of colds than would ordinarily come to the attention of a physician. Apart from the question of completeness, the data presented in this article should give a reasonably accurate picture of the chronology of respiratory diseases among the students of the university.

For the three school years 1928-1931, 13,155 student years were studied with relation to the number of students who were treated for respiratory illness during each school year. This involved counting many of the same persons for more than one year. The frequency with which a student was treated for one or more cases during a year was also determined by groups. The count for the same person in successive years has not been determined. The average number treated annually in the population studied was 45 per cent.

Table 1 shows the distribution of those treated according to the number of cases for which they were treated. Twenty-five per cent of those treated had two cases and 18 per cent had three or more cases, the other 57 per cent being treated at the clinic for only one respiratory case.

**TABLE 1.**—*Distribution of 5,955 students treated by the university physicians for minor respiratory conditions according to the number of cases for which treated during the school year, University of Michigan student health service*

[Based on data for the three school years 1928-1931]

Number of minor respiratory cases	Number of students treated	Per cent
Total.....	<sup>1</sup> 5,955	100
One.....	3,406	57
Two.....	1,461	25
Three.....	877	11
Four.....	257	4
Five or more.....	154	3

<sup>1</sup> 45 per cent of average population studied for school year.

#### CHRONOLOGY

Table 2 shows rates by months for the 14-year period from 1917 to 1931. Rates are shown for both the regular and summer session months and are computed on an annual basis. Adjustments have also been made for holiday periods, such as Christmas and Easter, to make the rates for the months in which holidays fall comparable with other months. Figure 1 shows graphically these monthly rates.

This figure indicates the usual large seasonal variation in the incidence of the respiratory diseases. Apart from this seasonal variation, certain months in which respiratory diseases were epidemic stand out with much higher rates than the expected seasonal incidence. These months correspond in general with those that have been found in mortality data to be the peaks of influenza epidemics (6), except that there is little or no peak corresponding to the great epidemic of the fall of 1918. There is a very large peak corresponding to the epidemic of the spring of 1918 and there are peaks for 1922, 1923, 1926, and 1928 corresponding to the definite epidemics that occurred in those years.

Table 3 summarizes the rates in yearly intervals, with an adjustment not only for vacation periods falling within the regular session but also for the summer vacation, to put the rates on a 12-month basis instead of a school-year basis. Table 4 shows the number of students enrolled during each of the school years (regular session) from 1917 to 1931, the number of cases of respiratory illness attended by university physicians in the group, and the rates per 1,000 students entitled to the service. Rates for each sex are given without any adjustment for vacation periods and on the basis of the regular session only. For both sexes combined, rates are given without any adjustment and also with adjustment for vacation periods within the regular session but without adjustment to the full 12-month year such as was done for Table 3.

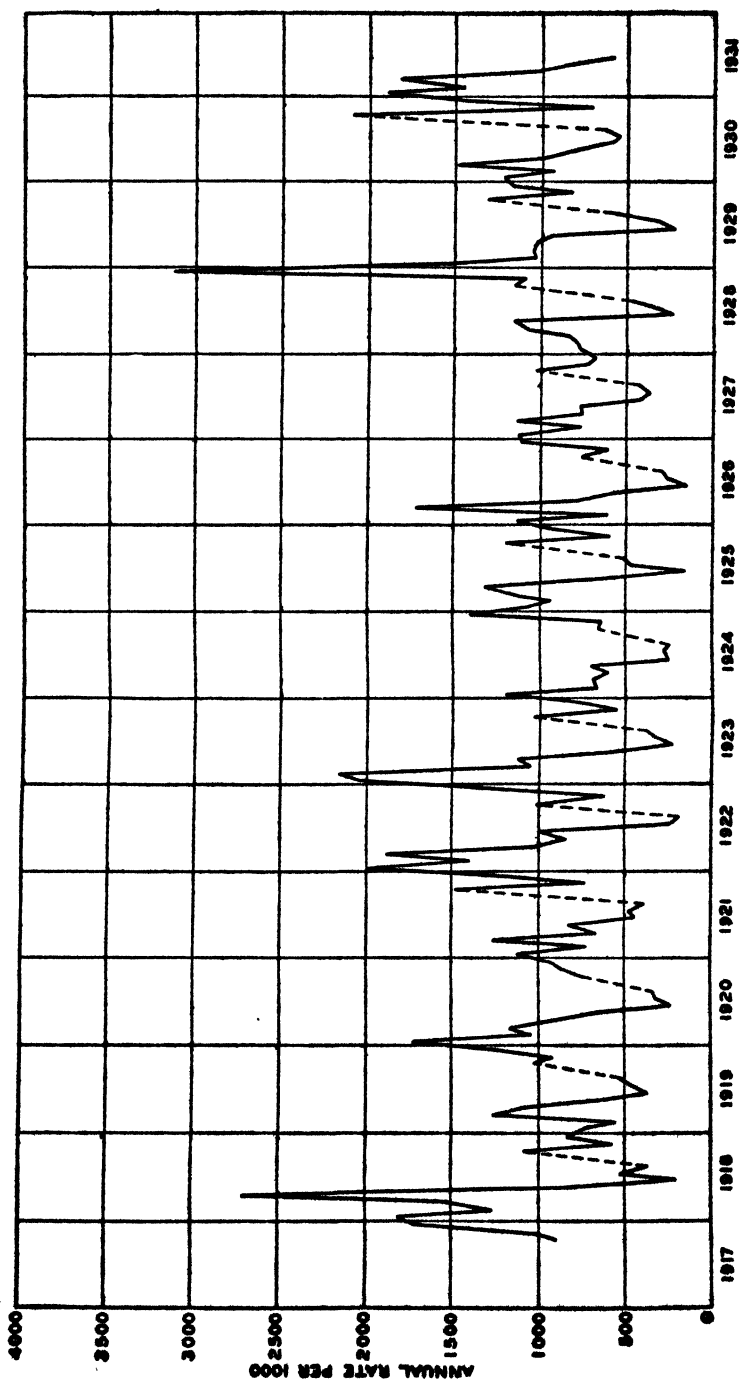


FIGURE 1.—Monthly incidence of minor respiratory conditions treated by university physicians among students of the University of Michigan. (Rates adjusted for vacation periods)

**TABLE 2.—Minor respiratory cases treated by the university physicians per 1,000 student population by months, 1917–1931, University of Michigan student health service**

[Rates adjusted for vacation periods]

Month	Monthly rate (annual basis)													
	1917-18	1918-19	1919-20	1920-21	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31
July-----		533	451	329	480	241	323	269	487	275	385	370	325	647
August-----		370	539	332	395	187	395	251	523	295	441	483	581	641
October-----	880	1,091	1,032	758	1,482	1,016	1,030	677	1,192	772	1,032	1,100	1,316	2,102
November-----	1,006	580	919	876	739	629	551	646	607	607	728	1,097	840	708
December-----	1,718	835	1,250	984	1,167	1,196	783	1,400	956	1,111	679	3,640	1,175	1,441
January-----	1,805	728	1,728	1,127	1,988	2,046	1,201	1,084	1,131	1,129	782	1,531	1,222	1,899
February-----	1,274	561	1,043	719	1,398	2,178	669	936	616	773	797	1,034	947	1,466
March-----	1,535	1,276	1,178	1,273	1,871	1,048	688	1,136	1,777	1,146	838	1,054	1,492	1,811
April-----	2,699	1,095	875	677	1,026	1,115	605	1,314	797	766	1,086	1,031	991	1,034
May-----	830	634	664	854	848	582	665	709	872	778	1,168	948	805	846
June-----	206	378	238	439	394	220	263	157	149	423	224	220	595	592

**TABLE 3.—Annual case rates from minor respiratory diseases treated by university physicians among students of Michigan University (estimates for whole 12 months)<sup>1</sup>**

Year July 1 to June 30	Rate per 1,000 whole-year basis	Year July 1 to June 30	Rate per 1,000 whole-year basis
1917-18.....	1,105	1925-26.....	871
1918-19.....	757	1926-27.....	772
1919-20.....	900	1927-28.....	838
1920-21.....	752	1928-29.....	1,147
1921-22.....	1,120	1929-30.....	1,000
1922-23.....	995	1930-31.....	1,198
1923-24.....	710		
1924-25.....	798	Average annual rate.....	926

<sup>1</sup> July and August estimates are at summer session rates, and September at the average of August and October rates. Regular session populations used in calculations.**TABLE 4.—Minor respiratory cases treated by the university physicians per 1,000 student population, by 10-month school years, 1917–1931, University of Michigan student health service**

School year	Population		Number of cases treated		Case rates per 1,000			
	Male	Female	Male	Female	Both sexes		Male	Female
					Adjusted for vacation periods within the regular session	Unadjusted	Unadjusted	Unadjusted
1917-18.....	3,434	1,145	3,220	795	976	876	937	694
1918-19.....	3,506	1,169	1,708	745	619	524	487	637
1919-20.....	5,474	1,824	3,828	979	753	858	699	836
1920-21.....	6,051	2,017	3,732	939	650	578	616	465
1921-22.....	6,085	2,028	5,390	1,261	972	822	885	631
1922-23.....	6,247	2,083	4,786	1,359	909	737	763	652
1923-24.....	5,939	2,309	3,172	934	891	497	534	404
1924-25.....	5,802	2,487	4,155	972	716	618	716	390
1925-26.....	6,446	2,148	4,308	1,104	725	629	668	514
1926-27.....	6,631	2,210	3,756	1,286	678	564	596	559
1927-28.....	6,502	2,285	4,019	1,337	714	609	618	585
1928-29.....	6,351	2,115	5,648	1,623	1,010	858	899	767
1929-30.....	6,625	2,208	4,895	1,457	852	719	738	659
1930-31.....	6,388	2,245	6,042	1,782	1,074	906	945	794

Figure 2 shows graphically the rates given in Table 4 for the regular session and in addition several years prior to 1917 that are not shown in the table. The rates for these years prior to 1917 are rather low, which may be due in part to the newness of the medical service and may indicate less use of the service rather than lower respiratory rates among the students. With the exception of higher rates in years when influenza occurred, there is little evidence of trend in these rates since the school year 1917-18. However, the last three

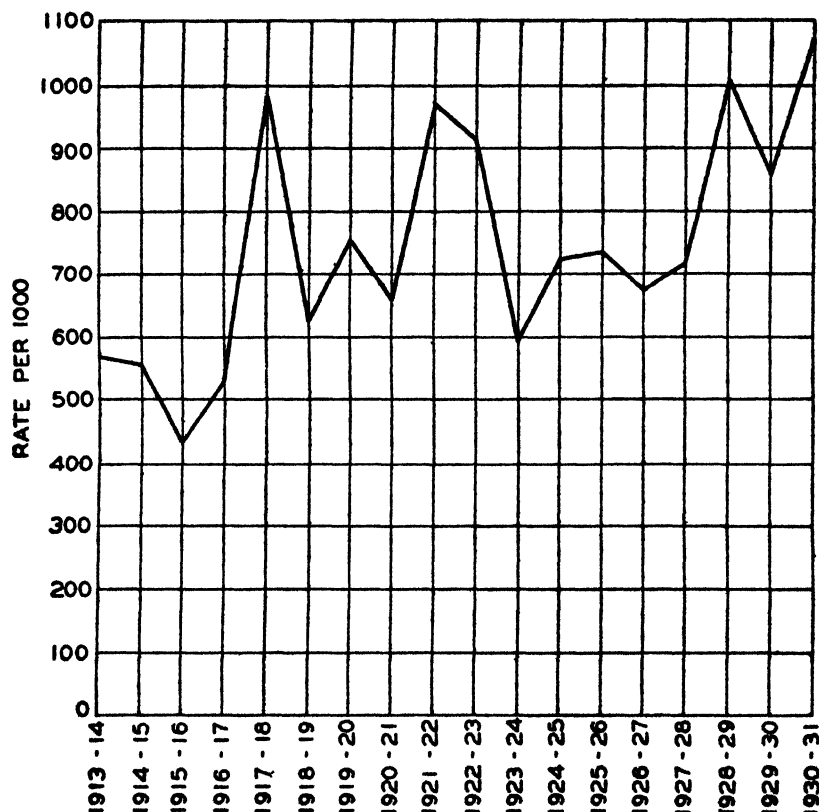


FIGURE 2.—Minor respiratory cases treated each year by the university physicians during regular sessions, per 1,000 student population, University of Michigan, 1912-1931. (Rates adjusted for vacation periods within the session)

years have shown rates considerably above the average, but two of these three years have been years of considerable influenza prevalence. As already noted, the school year 1918-19 does not show up as a year with high respiratory rates in these data.

Figure 3 shows similar rates for each year for the summer sessions only. There is little similarity between the variations in the summer session and the winter session rates. Indeed, there is no particular reason to expect similarity, since the summer-session student body

is made up of a very different group from that of the regular session; and, moreover, the occurrence of an influenza epidemic during the winter would have little or no bearing upon what might be expected during the summer session. Since these rates are for minor respiratory diseases, influenza and grippe must be an important factor in the size of the rate and its variation from year to year.

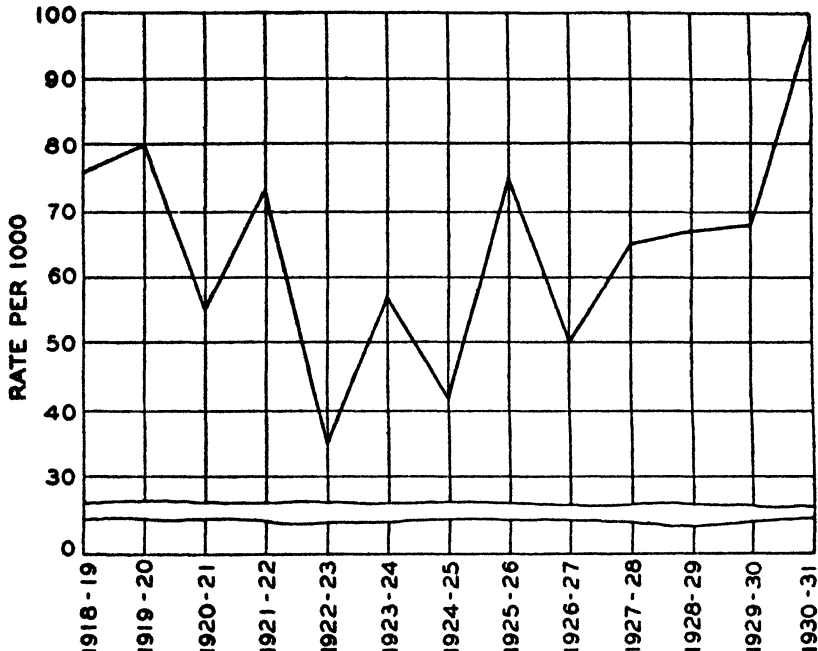


FIGURE 3.—Minor respiratory cases treated each year by the university physicians during summer sessions, per 1,000 student population, University of Michigan, 1918-1931. (Rates adjusted for vacation periods within the session)

Table 5 shows for each month of the year the average of the rates for the 14-year period 1917-1931. The rates for both sexes combined have been adjusted for vacation periods, but the rates for males and females are without any such adjustment. Figure 4 shows these rates graphically. According to these data there is a peak in October, followed by a lower rate in November. This fall peak has been noted by other investigators also. The drop in February may be accounted for in part by the intersemester disturbance in student attendance



and might result in fewer cases coming to the attention of the university physicians.

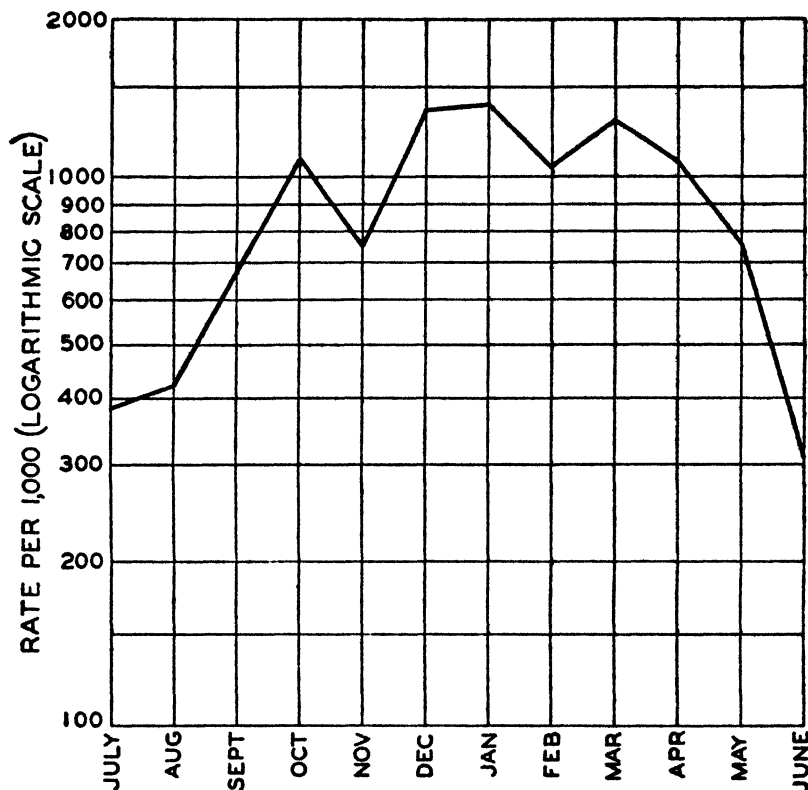


FIGURE 4.—Seasonal variation in minor respiratory conditions treated by university physicians, average rates (annual basis) for each month, based on the 14-year period, 1917-1931, University of Michigan. (Rates adjusted for vacation periods within the month. August and October are connected by a straight line; no data for September)

TABLE 5.—Average rates (annual basis) for each month during the 14-year period 1917-1931 for minor respiratory cases treated by the university physicians, University of Michigan student health service

Month	Both sexes (adjusted for vacation periods within the regular session)	Male (un- adjusted)	Female (un- adjusted)	Per cent male rate is in ex- cess of female
July.....	385	399	362	10
August.....	418	314	202	55
October.....	1,110	1,151	990	16
November.....	752	786	711	10
December.....	1,327	851	756	18
January.....	1,385	1,316	1,033	27
February.....	1,029	1,017	794	23
March.....	1,294	1,267	1,117	22
April.....	1,079	835	601	40
May.....	779	821	668	23
June.....	300	207	191	8

## SEX DIFFERENCES IN INCIDENCE RATES

Figure 5 shows the average rates for each month for the two sexes separately, the averages being based on the 14-year period 1917-1931. It will be noted that for every month the averages are slightly less for females than for males. Figure 6 shows regular session rates for males and females by years. It will be noted that here also the rates for females are consistently lower than the rates for males, the only exception being the rate for the school year 1918-19.

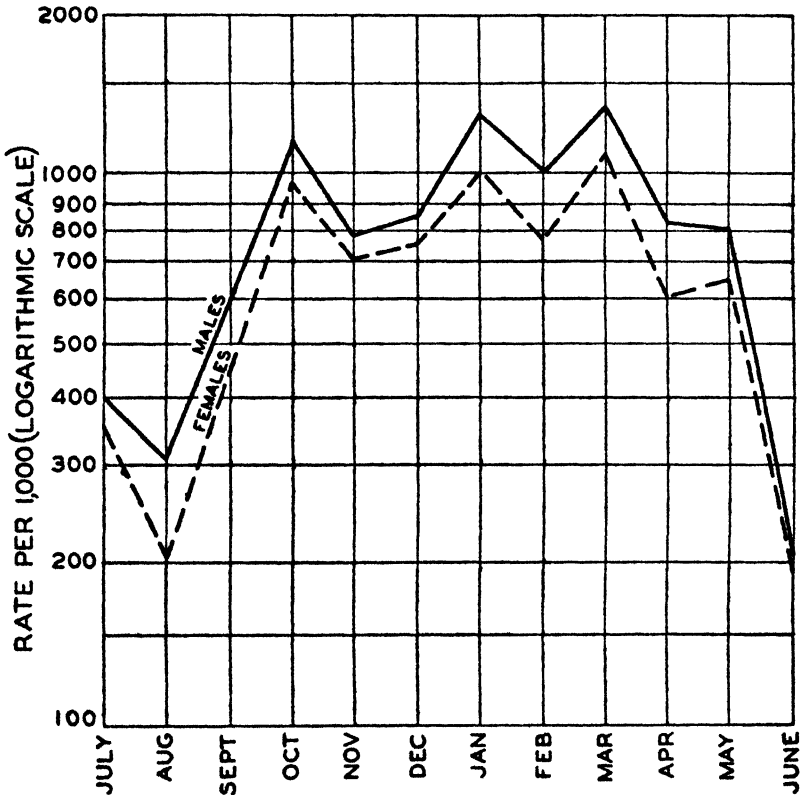


FIGURE 5.—Sex differences in case rates for minor respiratory conditions treated by university physicians, average rates (annual basis) for males and females for each month, based on the 14-year period, 1917-1931, University of Michigan. (August and October are connected by straight lines; no data for September)

Rates were computed for males and females for each school month, including the summer session, for each of the 14 years from 1917 to 1931. These rates are not shown in any table, but it may be stated that the male rates were rather consistently higher for the different months of these years. Out of 152 months throughout the period (no July and August data for 1917-18 were available), there were only 28 months in which the rate for cases treated by the university physicians among females was greater than the rate among males.

The consistently lower rates for women students can be explained by us upon no other basis than that acute respiratory conditions are somewhat less frequent or less troublesome in females. On the history blanks filled out by 10,229 entering students, in six groups, since 1919, frequent colds were listed by a slightly greater percentage

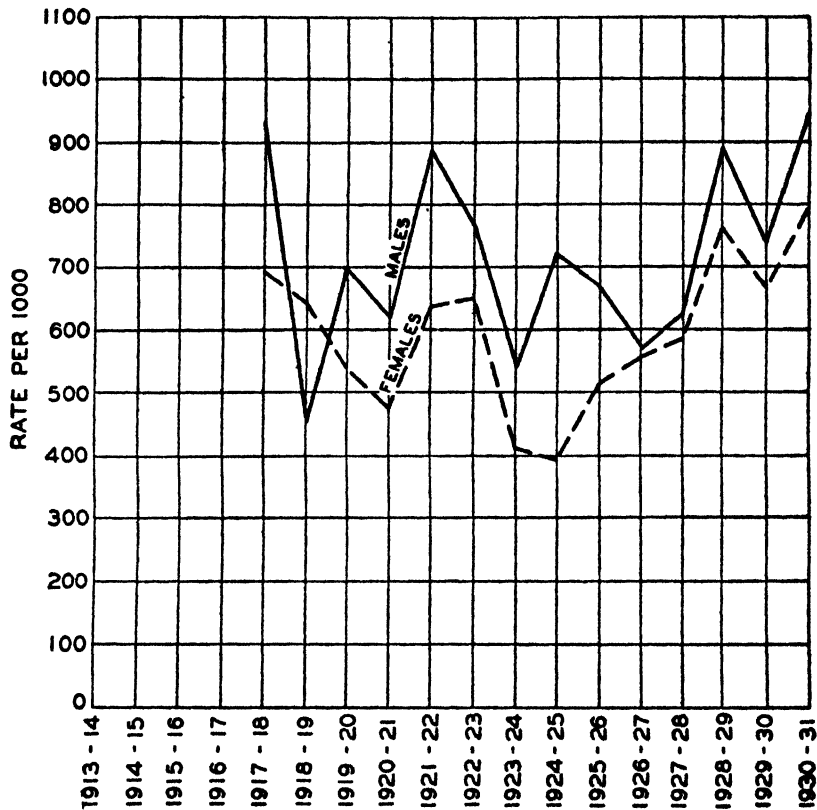


FIGURE 6.—Sex differences in case rates for minor respiratory conditions treated each year by the university physicians during regular sessions, University of Michigan, 1917-1931

of males than females in each group. The averages are, females 18 per cent and males 22 per cent.

TABLE 6.—Dispensary calls for respiratory infections and all causes, by sex, in selected groups for three years, University of Michigan student medical service

School year	Classes	Student school years		Call rates per 100					
				All causes			Respiratory infections		
		Women	Men	Women	Men	Male excess	Women	Men	Male excess
1928-29	Freshman	329	996	530	535	Per cent 1	70	81	Per cent 15
1929-30	Freshmen and sophomores.	667	2,012	508	595	17	62	76	23
1930-31	Freshmen, sophomores, and juniors.	875	2,358	700	785	12	85	104	23
Combined	Combined	1,871	5,368	600	665	10	72	90	24

Table 6 shows comparative rates of clinic attendance for respiratory infections and all causes of sickness. While the male rate for all causes exceeds the female rate, the amount of excess is less than one-half the excess for respiratory infections. This sex difference in these infections here is contrary to that reported in survey studies (1), (7), (8), (9), (10). In a study of absences from work of one day or longer among employees of an electric company in Boston during a 10-year period, the respiratory rate for females was 70 per cent greater than for males (11).

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## DEATH RATES IN A GROUP OF INSURED PERSONS

### RATES FOR PRINCIPAL CAUSES OF DEATH FOR APRIL, 1932

The accompanying table is taken from the Statistical Bulletin for May, 1932, issued by the Metropolitan Life Insurance Co., and presents the mortality record of many million insured persons of the industrial insurance department of the company for April, 1932, as compared with that for the preceding month and for April, 1931. It also presents a comparison of the cumulative death rates for January-April for the two years. The annual general death rate for this group in the past few years has averaged about 72 per cent of the death rate for the registration area of the United States.

The Bulletin states:

The lowest mortality rate ever recorded for the month of April among the industrial policyholders of the company in the United States and Canada was

that registered this year. The figure is 9.6 deaths per 1,000 living, which may be compared with 9.8 in April of last year, and with 10.4 in March of this year. Health conditions during the latter part of April were particularly favorable.

The year-to-date death rate for the January-April period (9.4 per 1,000) is lower than ever previously registered for the like part of any year. Furthermore, the mortality is below that of any other year in all sections of the United States and in Canada.

The more detailed aspects of the health record of the winter and early spring of 1932 are as follows: There have been sharp declines in the mortality from such important diseases as influenza, tuberculosis, and pneumonia. From these three diseases alone there have been 2,938 fewer deaths in this insured group in the first four months of 1932 than would have occurred if the much higher death rates of the like part of 1931 had prevailed. There have been, also, slight reductions this year in deaths from cerebral hemorrhage, organic heart disease, chronic nephritis, accidents, and automobile fatalities, as well as from several diseases of lesser numerical importance. The prevailing low cumulative rate of 97.1 per cent per 100,000 for pneumonia has never before been even closely approached during the like period of any year. In 1931, for example, it was 126.5; in 1930, 117.2; and in 1929, 154.6. The influenza death rate is down 31 per cent and that for tuberculosis 10 per cent in a single year. The reductions for heart disease and automobile fatalities, although small, are of unusual interest. For, if they are still in evidence at the end of 1932, they will mark breaks in an almost continuously rising death rate for these causes of death over a long series of years.

The cancer situation, as in 1931, is the black spot in the year's health record. For many years, it is true, there has been a rising tendency in the cancer mortality rate. Up to 1931, however, the increase from year to year had been relatively small—even though persistent; but last year the rise amounted to 7.4 per cent; and this year, to date, there has been a further rise of 6.8 per cent.

*Death rates (annual basis) per 100,000 for principal causes of death*

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Annual rate per 100,000 lives exposed <sup>1</sup>				
	April, 1932	March, 1932	April, 1931	Cumulative January-April	
				1932	1931
Total, all causes.....	957.8	1,043.5	977.3	943.3	1,009.2
Typhoid fever.....	.6	.9	.9	1.2	1.1
Measles.....	2.4	3.6	5.9	2.7	4.3
Scarlet fever.....	4.7	4.9	4.2	4.0	4.1
Whooping cough.....	4.9	4.6	2.8	4.0	3.8
Diphtheria.....	4.5	4.1	3.0	5.3	5.2
Influenza.....	37.1	43.6	33.1	30.6	44.2
Tuberculosis (all forms).....	78.7	76.9	80.6	74.4	82.7
Tuberculosis of respiratory system.....	68.9	69.0	70.2	66.1	73.5
Cancer.....	90.1	93.2	82.9	90.0	84.3
Diabetes mellitus.....	25.2	27.6	23.0	24.7	24.2
Cerebral hemorrhage.....	66.2	77.6	68.9	68.2	65.4
Organic diseases of heart.....	169.3	183.7	168.8	169.9	172.4
Pneumonia (all forms).....	97.6	123.7	111.2	97.1	126.5
Other respiratory diseases.....	10.3	13.3	13.4	11.4	13.9
Diarrhea and enteritis.....	8.5	7.8	9.4	8.2	10.2
Bright's disease (chronic nephritis).....	73.5	78.9	73.8	74.3	74.9
Puerperal state.....	10.3	11.3	12.3	11.1	12.3
Suicides.....	11.7	9.4	11.3	10.3	9.6
Homicides.....	5.9	6.3	6.0	6.3	6.5
Other external causes (excluding suicides and homi- cides).....	49.8	50.8	53.5	50.2	52.9
Traumatism by automobiles.....	16.0	18.8	18.5	17.8	18.4
All other causes.....	206.2	216.5	211.1	199.4	207.7

<sup>1</sup> All figures in this table include insured infants under one year of age. The rates for 1932 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

## COURT DECISION RELATING TO PUBLIC HEALTH

*Powers of board of health held not subordinated to zoning resolutions.*— (New York Supreme Court, Appellate Division; *People v. Department of Health of City of New York*, 256 N. Y. S. 856; decided Apr. 29, 1932.) The following per curiam opinion of the appellate division of the New York Supreme Court deals with the validity of certain regulations of the New York City Health Department when considered in conjunction with zoning resolutions:

Order denying motion for a peremptory or alternative mandamus order unanimously affirmed, with costs.

The powers of the board of health under section 1172 of the Greater New York Charter (Laws 1901, c. 466), as amended by Laws 1904, c. 628, sec. 3, and under sections 19 and 325 of the Sanitary Code, are not subordinated to the zoning resolutions so as to forbid the adoption by the board of health of the regulation here attacked. The establishment of the zones by the board of estimate and apportionment does not mean that any part of an unrestricted district may be used for a poultry slaughterhouse, and it is not an unreasonable regulation to fix a suitable area of unrestricted property for the location of a site for such a business. We are of opinion that the regulation in question was validly enacted. *People ex rel. Lieberman v. Vandecarr*, 175 N. Y. 440, 67 N. E. 913, 108 Am. St. Rep. 781.

## DEATHS DURING WEEK ENDED JUNE 4, 1932

*Summary of information received by telegraph from industrial insurance companies for the week ended June 4, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*

	Week ended June 4, 1932	Corresponding week, 1931
Policies in force.....	72, 901, 860	75, 158, 847
Number of death claims.....	11, 261	13, 200
Death claims per 1,000 policies in force, annual rate.....	8. 1	9. 2
Death claims per 1,000 policies, first 22 weeks of year, annual rate.....	10. 3	10. 7

Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended June 4, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended June 4, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 22 weeks	
	Total deaths	Death rate <sup>1</sup>	Deaths under 1 year	Infant mortality rate <sup>1</sup>	Death rate <sup>1</sup>	Deaths under 1 year	1932	1931
Total (85 cities).....	7,493	10.7	612	4.50	11.6	680	12.8	13.2
Akron.....	46	9.1	1	12	7.7	1	7.7	8.3
Albany <sup>1</sup> .....	26	16.4	2	41	18.2	2	14.7	15.5
Atlanta <sup>1</sup> .....	68	12.5	4	39	14.3	6	13.9	16.0
White.....	32	8.9	2	29	10.7	4	10.9	12.9
Colored.....	36	19.7	2	57	21.3	4	19.9	22.4
Baltimore <sup>1</sup> .....	194	12.4	24	85	14.3	22	14.3	16.2
White.....	148	11.5	14	64	12.9	12	13.3	14.8
Colored.....	46	16.0	10	161	20.6	10	18.8	22.7
Birmingham <sup>1</sup> .....	43	8.1	3	31	13.7	4	11.9	14.9
White.....	20	6.1	2	33	11.2	2	9.5	11.6
Colored.....	23	11.4	1	27	17.8	2	15.8	20.3
Boston.....	200	13.3	15	45	13.9	28	15.4	15.7
Bridgeport.....	30	10.6	2	26	12.4	3	11.6	12.3
Buffalo.....	138	12.1	9	43	13.3	15	13.8	14.6
Cambridge.....	20	9.1	0	0	12.8	3	13.8	13.7
Camden.....	35	15.4	5	88	8.8	4	16.0	16.1
Canton.....	14	6.8	0	0	13.7	1	10.0	11.4
Chicago <sup>1</sup> .....	619	9.2	45	44	11.0	47	10.7	11.5
Cincinnati.....	109	12.3	4	26	15.5	13	15.9	17.2
Cleveland.....	159	9.0	10	32	12.0	9	11.8	12.2
Columbus.....	67	11.7	6	60	15.0	6	14.5	15.1
Dallas <sup>1</sup> .....	49	9.1	3	-----	10.9	8	10.8	12.2
White.....	35	7.8	3	-----	9.5	6	9.8	10.8
Colored.....	14	15.0	0	-----	17.6	2	15.4	19.0
Dayton.....	41	10.3	1	14	10.5	6	13.2	13.2
Denver.....	99	17.6	7	69	14.7	6	15.7	15.1
Des Moines.....	24	8.6	3	51	9.7	2	12.3	11.7
Detroit.....	266	8.1	26	47	7.9	41	8.4	9.3
Duluth.....	20	10.3	1	29	8.2	1	11.0	11.8
El Paso.....	26	12.7	5	-----	11.9	4	14.3	16.7
Erie.....	25	11.0	3	64	10.2	3	12.3	11.6
Evansville.....	27	13.3	2	67	11.0	2	10.2	11.8
Fall River <sup>1</sup> .....	22	10.0	0	0	9.5	1	12.9	13.5
Flint.....	22	6.8	6	88	7.3	3	8.3	8.0
Fort Wayne.....	17	7.3	1	26	12.3	1	10.6	11.5
Fort Worth <sup>1</sup> .....	28	8.6	3	-----	9.3	0	10.3	12.1
White.....	25	9.1	3	-----	10.0	0	10.0	11.6
Colored.....	3	5.9	0	-----	5.8	0	12.1	14.6
Grand Rapids.....	23	6.9	2	34	14.0	3	9.4	9.9
Hartford.....	43	12.2	2	27	-----	-----	-----	-----
Houston <sup>1</sup> .....	59	9.5	9	-----	11.1	7	11.0	11.5
White.....	37	8.1	7	-----	10.1	5	10.2	10.6
Colored.....	22	13.4	2	-----	12.8	1	13.8	14.1
Indianapolis <sup>1</sup> .....	80	11.2	7	57	13.4	5	13.5	14.6
White.....	74	11.8	7	64	13.0	4	13.1	14.2
Colored.....	6	6.8	0	0	16.2	1	16.0	17.8
Jersey City.....	67	10.9	7	58	13.6	15	12.0	12.0
Kansas City, Kans. <sup>1</sup> .....	26	11.0	2	44	13.2	3	13.0	14.5
White.....	18	9.4	2	54	12.1	3	12.7	13.4
Colored.....	8	17.6	0	0	17.8	0	14.5	19.1
Kansas City, Mo.....	95	11.9	10	113	13.8	10	12.8	14.5
Knoxville <sup>1</sup> .....	20	9.2	3	76	13.4	4	12.7	13.9
White.....	13	7.2	3	84	10.3	1	11.4	12.9
Colored.....	7	20.0	0	0	23.3	3	19.0	19.2
Long Beach.....	26	8.4	2	52	9.2	1	9.5	10.3
Los Angeles.....	264	10.0	24	71	9.2	11	11.1	11.2
Louisville <sup>1</sup> .....	63	10.7	2	18	11.0	4	13.6	13.8
White.....	49	9.8	1	10	9.6	2	12.4	14.1
Colored.....	14	15.2	1	75	15.6	2	21.4	24.9
Lowell <sup>1</sup> .....	34	17.7	2	52	9.9	3	14.9	13.5
Lynn.....	13	6.6	1	28	13.2	2	11.7	11.5
Memphis <sup>1</sup> .....	96	19.0	6	65	15.5	6	16.1	17.2
White.....	45	14.5	3	51	13.0	3	13.1	14.2
Colored.....	51	28.5	3	90	19.5	3	22.7	23.4
Miami <sup>1</sup> .....	23	10.6	2	56	7.9	1	12.1	13.2
White.....	11	6.5	1	39	6.6	0	11.9	12.5
Colored.....	12	24.8	1	101	12.4	1	18.6	18.6

See footnotes at end of table.

Deaths<sup>1</sup> from all causes in certain large cities of the United States during the week ended June 4, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued.

City	Week ended June 4, 1932				Corresponding week, 1931		Death rate <sup>2</sup> for the first 22 weeks	
	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mortality rate <sup>4</sup>	Death rate <sup>5</sup>	Deaths under 1 year	1932	1931
Milwaukee.....	108	8.9	12	57	9.2	8	9.5	10.8
Minneapolis.....	90	9.8	9	59	12.8	13	11.0	11.9
Nashville <sup>6</sup> .....	57	19.0	4	60	14.4	7	15.4	17.5
White.....	33	15.1	3	50	14.8	5	13.9	15.3
Colored.....	24	29.3	1	62	13.4	2	19.2	23.4
New Bedford <sup>7</sup> .....	24	11.1	3	86	14.8	3	12.7	13.6
New Haven.....	35	11.2	2	40	6.7	0	12.2	13.0
New Orleans <sup>8</sup> .....	124	13.7	13	74	17.2	21	15.5	18.0
White.....	79	12.3	9	78	13.0	12	13.2	14.7
Colored.....	45	17.1	4	65	27.5	9	21.1	26.3
New York.....	1,436	10.4	121	54	10.5	112	11.7	12.7
Bronx Borough.....	179	6.8	16	46	7.1	16	8.6	9.2
Brooklyn Borough.....	511	10.0	47	52	9.2	48	10.9	11.7
Manhattan Borough.....	545	16.0	43	61	16.4	37	17.9	19.4
Queens Borough.....	158	6.8	13	54	7.4	9	7.5	8.1
Richmond Borough.....	43	13.4	2	39	17.6	2	14.7	14.4
Newark, N. J.....	79	9.2	8	44	12.8	5	11.6	13.0
Oakland.....	41	7.2	2	25	9.8	1	11.0	11.1
Oklahoma City.....	34	8.6	6	82	9.0	4	10.6	12.2
Omaha.....	52	12.4	4	45	12.3	8	14.1	14.5
Peterborough.....	32	12.0	8	54	14.3	1	13.5	15.2
Peoria.....	23	10.8	2	55	4.8	3	11.9	13.1
Philadelphia.....	464	12.3	28	43	12.3	41	13.6	15.2
Pittsburgh.....	146	11.2	20	92	13.5	20	14.1	16.7
Portland, Oreg.....	64	10.8	4	51	11.5	5	11.9	12.5
Providence.....	53	10.8	4	39	9.8	8	14.7	14.5
Richmond <sup>9</sup> .....	52	14.7	3	45	17.0	5	14.5	17.2
White.....	20	7.9	2	45	15.5	3	12.0	14.7
Colored.....	32	31.7	1	46	20.7	2	21.1	23.4
Rochester.....	67	10.5	6	57	11.3	5	12.9	13.3
St. Louis.....	180	11.3	15	54	14.6	6	14.5	16.8
St. Paul.....	59	11.0	5	53	10.0	0	11.1	11.5
Salt Lake City <sup>4</sup> .....	31	11.2	6	94	6.2	1	11.3	12.7
San Antonio.....	58	12.3	12	17	17.6	18	14.4	16.2
San Diego.....	38	12.2	1	22	14.0	3	15.3	14.8
San Francisco.....	151	11.9	2	14	13.6	12	12.2	13.8
Schenectady.....	11	6.0	0	0	6.0	1	11.5	11.4
Seattle.....	74	10.3	4	40	10.9	5	12.3	12.5
Somerville.....	16	7.9	0	0	5.9	3	9.9	10.7
South Bend.....	19	8.9	0	0	7.2	1	8.0	8.9
Spokane.....	27	12.1	2	53	11.2	2	12.4	12.3
Springfield, Mass.....	31	10.5	3	51	9.9	3	11.9	13.5
Syracuse.....	46	11.1	4	52	11.3	4	12.6	12.6
Tacoma.....	25	12.0	0	0	8.7	2	12.9	13.5
Tampa <sup>10</sup> .....	22	10.7	3	56	11.4	1	12.4	12.3
White.....	15	9.2	1	35	10.1	0	11.8	11.7
Colored.....	7	16.1	2	317	16.4	1	14.6	16.8
Toledo.....	72	12.5	4	43	16.0	4	12.4	13.0
Trenton.....	17	7.2	0	0	15.6	2	16.9	15.8
Utica.....	22	11.2	4	114	14.3	1	16.7	15.8
Washington, D. C. <sup>11</sup> .....	178	18.8	18	101	12.5	11	17.8	17.3
White.....	112	16.4	9	74	10.8	6	15.6	14.8
Colored.....	66	25.2	9	160	17.0	5	22.5	24.1
Waterbury.....	20	10.3	0	0	6.2	2	9.9	10.6
Wilmington, Del. <sup>12</sup> .....	26	12.8	3	63	12.7	2	16.7	15.8
Worcester.....	34	8.9	0	0	9.5	3	13.3	14.2
Yonkers.....	13	4.8	1	26	9.4	4	8.4	9.6
Youngstown.....	26	7.8	1	16	7.5	1	10.7	11.0

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>2</sup> These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.

<sup>3</sup> Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.

<sup>4</sup> Data for 81 cities.

<sup>5</sup> Deaths for week ended Friday.

<sup>6</sup> For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 23; Baltimore, 18; Birmingham, 33; Dallas, 17; Fort Worth, 16; Houston, 37; Indianapolis, 13; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 33; Miami, 23; Nashville, 26; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.

<sup>7</sup> Population Apr. 1, 1930; decreased 1930 to 1932, no estimate made.



# PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended June 11, 1932, and June 13, 1931

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 11, 1932, and June 13, 1931*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931
<b>New England States:</b>								
Maine.....	4	7	1	1	91	24	0	1
New Hampshire.....	2				51	14	0	0
Vermont.....					185	54	0	0
Massachusetts <sup>1</sup> .....	37	36	3		1,044	596	3	1
Rhode Island.....	8	6			33	137	0	0
Connecticut.....	4	1	1	2	255	241	0	0
<b>Middle Atlantic States:</b>								
New York.....	69	105	19	17	2,469	2,441	7	6
New Jersey.....	32	42	2	7	972	860	1	4
Pennsylvania.....	52	67			1,015	2,405	5	6
<b>East North Central States:</b>								
Ohio.....	23	45	14	28	2,327	1,474	5	5
Indiana.....	15	18	3	2	181	380	2	4
Illinois.....	75	105	9	11	861	1,556	4	14
Michigan.....	14	28	4	4	3,101	298	2	4
Wisconsin.....	16	4	5	13	1,484	1,062	1	3
<b>West North Central States:</b>								
Minnesota.....	11	12	1	1	114	127	1	6
Iowa.....	5	3			4	26	0	0
Missouri.....	22	17	2		57	162	3	1
North Dakota.....	3	1			27	15	1	1
South Dakota.....	13	3		1	6	12	0	0
Nebraska.....	5	5		2	4	8	0	1
Kansas.....	5	14		1	251	116	1	0
<b>South Atlantic States:</b>								
Delaware.....	1	2			2	65	0	0
Maryland <sup>1</sup> .....	11	11	5	7	35	477	1	0
District of Columbia.....	3	13	1		16	53	1	0
West Virginia.....	2	11	16	7	335	164	2	1
North Carolina.....	11	14	5	1	614	542	2	4
South Carolina <sup>1</sup> .....	6	10	243	176	173	164	0	1
Georgia <sup>1</sup> .....	10	2	33	13	68	70	2	0
Florida <sup>1</sup> .....	5	6	1		1	50	0	0
<b>East South Central States:</b>								
Kentucky.....	4	7	18		27	90	0	3
Tennessee.....	11	5	27	9	5	60	1	0
Alabama <sup>1</sup> .....	12	5	45	12	16	40	0	0
Mississippi.....	3	1					0	1
<b>West South Central States:</b>								
Arkansas.....	1	1		4		25	0	0
Louisiana.....	23	11	4	3	8	5	0	2
Oklahoma <sup>1</sup> .....	10	12	7	17	113	33	0	0
Texas.....	18	21	25	4	76	77	0	2

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers  
for weeks ended June 11, 1932, and June 13, 1931—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931
<b>Mountain States:</b>								
Montana.....	1	—	—	—	110	12	0	0
Idaho.....	1	—	1	—	3	1	0	1
Wyoming.....	—	—	—	—	70	13	0	0
Colorado.....	14	5	—	—	60	96	1	0
New Mexico.....	4	4	—	—	25	47	0	0
Arizona.....	3	—	1	1	7	23	1	1
Utah.....	—	1	—	—	1	4	1	0
<b>Pacific States:</b>								
Washington.....	16	5	—	—	254	74	1	0
Oregon.....	2	2	0	12	151	47	1	0
California.....	61	60	42	32	452	730	2	1
<b>Total.....</b>	<b>648</b>	<b>729</b>	<b>537</b>	<b>378</b>	<b>17, 156</b>	<b>14, 989</b>	<b>52</b>	<b>74</b>
Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931
<b>New England States:</b>								
Maine.....	0	0	35	22	0	0	1	7
New Hampshire.....	0	0	7	1	0	0	0	0
Vermont.....	0	0	8	4	2	8	0	0
Massachusetts.....	0	2	352	195	0	0	4	2
Rhode Island.....	0	0	53	31	0	0	0	0
Connecticut.....	0	0	77	26	0	0	0	2
<b>Middle Atlantic States:</b>								
New York.....	2	5	922	610	1	3	16	18
New Jersey.....	0	0	209	219	0	0	2	9
Pennsylvania.....	1	1	472	430	0	0	10	11
<b>East North Central States:</b>								
Ohio.....	2	1	331	352	8	20	11	7
Indiana.....	0	0	62	99	12	101	10	0
Illinois.....	3	1	255	401	7	60	16	6
Michigan.....	3	3	356	384	9	30	8	5
Wisconsin.....	0	1	76	99	0	6	1	3
<b>West North Central States:</b>								
Minnesota.....	0	2	53	67	5	5	1	0
Iowa.....	0	0	33	42	22	61	1	2
Missouri.....	0	1	21	68	1	37	1	5
North Dakota.....	0	2	6	12	3	7	0	0
South Dakota.....	0	1	3	4	0	2	0	1
Nebraska.....	1	0	9	32	8	20	0	0
Kansas.....	0	0	16	25	6	64	5	4
<b>South Atlantic States:</b>								
Delaware.....	0	0	4	9	0	0	1	0
Maryland.....	0	0	59	28	0	0	18	6
District of Columbia.....	1	0	12	10	0	0	2	0
West Virginia.....	0	0	11	26	1	3	5	3
North Carolina.....	2	0	29	25	5	1	17	18
South Carolina.....	0	3	0	1	0	2	30	24
Georgia.....	0	1	6	28	0	0	21	23
Florida.....	0	0	1	1	0	0	5	1
<b>East South Central States:</b>								
Kentucky.....	1	0	49	28	6	24	26	5
Tennessee.....	1	1	16	12	3	4	40	12
Alabama.....	0	1	9	13	7	3	18	20
Mississippi.....	0	0	3	7	5	17	36	13
<b>West South Central States:</b>								
Arkansas.....	1	1	1	3	2	40	7	4
Louisiana.....	0	1	6	24	4	17	21	17
Oklahoma.....	0	1	15	12	15	60	8	10
Texas.....	6	0	17	45	22	135	10	11

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 11, 1932, and June 13, 1931—Continued*

Division and State	Polio-myelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931	Week ended June 11, 1932	Week ended June 13, 1931
<b>Mountain States:</b>								
Montana.....	0	1	8	13	7	7	3	3
Idaho.....	0	0	0	1	0	1	0	0
Wyoming.....	0	0	4	11	0	0	0	0
Colorado.....	0	2	25	14	3	0	2	1
New Mexico.....	0	0	2	7	0	0	1	1
Arizona.....	0	0	5	2	0	0	3	7
Utah.....	0	0	7	3	0	1	2	1
<b>Pacific States:</b>								
Washington.....	2	1	11	20	14	26	13	6
Oregon.....	1	0	3	13	2	12	3	2
California.....	1	5	141	96	12	17	10	18
<b>Total.....</b>	<b>28</b>	<b>38</b>	<b>3,800</b>	<b>2,575</b>	<b>192</b>	<b>794</b>	<b>389</b>	<b>285</b>

<sup>1</sup> Typhus fever, 11 cases: 1 case in Massachusetts, 2 cases in South Carolina, 4 cases in Georgia, 1 case in Florida, and 3 cases in Alabama.

<sup>2</sup> New York City only.

<sup>3</sup> Week ended Friday.

<sup>4</sup> Figures for 1932 are exclusive of Oklahoma City and Tulsa, and for 1931 are exclusive of Tulsa only.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influen- za	Ma- laria	Meas- les	Pei- sagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
<i>April, 1933</i>										
Delaware.....		16			4			83	0	1
<i>May, 1933</i>										
Connecticut.....	2	15	35		1, 125			461	0	4
Delaware.....		2			5		0	50	6	2
Florida.....	1	24	15	8	33	2	0	6	21	23
Wyoming.....		8	1		139		0	23	2	1

<i>April, 1932</i>		Cases	<i>May, 1933</i>		Cases
<b>Delaware:</b>			<b>Delaware:</b>		
Chicken pox.....		20	Connecticut.....		285
Mumps.....		48	Delaware.....		32
Rabies in animals.....		4	Florida.....		32
Whooping cough.....		60	Wyoming.....		57
			<b>Ophthalmia neonatorum:</b>		
			Connecticut.....		1
			<b>Paratyphoid fever:</b>		
			Connecticut.....		4
			<b>Rabies in animals:</b>		
			Connecticut.....		12
			Delaware.....		1
			<b>Rocky Mountain spotted or tick fever:</b>		
			Wyoming.....		25
			<b>Septic sore throat:</b>		
			Connecticut.....		12
			Wyoming.....		1
			<b>Tetanus:</b>		
			Connecticut.....		1
<b>Conjunctivitis:</b>					
Connecticut.....		30			
Wyoming.....		1			
<b>Dysentery:</b>					
Florida.....		3			
<b>German measles:</b>					
Connecticut.....		21			

<b>Trachoma:</b>	<b>Cases</b>	<b>Whooping cough:</b>	<b>Cases</b>
Connecticut.....	1	Connecticut.....	409
<b>Tularaemia:</b>		Delaware.....	30
Wyoming.....	1	Florida.....	46
<b>Typhus fever:</b>		Wyoming.....	1
Florida.....	3		
<b>Undulant fever:</b>			
Connecticut.....	1		

**Cases of Certain Communicable Diseases Reported for the Month of April, 1932,  
by State Health Officers**

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- cu- losis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	122	4	1,130	76	167	0	65	2	128
New Hampshire.....		4			149	0		5	
Vermont.....	25	4	400	427	55	14	114	1	82
Massachusetts.....	1,002	131	3,106	1,390	2,249	0	512	10	899
Rhode Island.....	31	23	602	221	272	0	68	2	63
Connecticut.....	396	26	636	325	431	1	135	8	517
New York.....	2,459	461	9,335	1,753	6,845	32	1,578	32	2,559
New Jersey.....	1,089	118	2,731	1,132	1,341	0	475	6	1,296
Pennsylvania.....	2,756	338	8,418	3,121	3,523	0	803	42	3,136
Ohio.....	1,108	182	8,911	879	1,674	94	716	35	2,771
Indiana.....	378	131	414	694	719	45	246	6	545
Illinois.....	1,150	305	3,942	357	1,692	31	1,208	27	1,538
Michigan.....	955	76	7,863	1,483	1,821	27	488	23	1,841
Wisconsin.....	1,230	42	7,910	1,020	390	9	100	14	1,505
Minnesota.....	190	47	171		611	6	247	5	186
Iowa.....	143	31	13	114	224	176	63	8	105
Missouri.....	317	42	367	280	229		255	6	604
North Dakota.....	37	14	181	25	73	23	10	4	22
South Dakota.....	20	10	36	28	13	7	17	8	138
Nebraska.....	168	22	11	216	126	48	21	1	102
Kansas.....	570	36	1,979	537	233	22	120	7	433
Delaware.....	20	16	4	48	82	0	17	1	60
Maryland.....	577	52	165	646	543	0	228	22	832
Dist. of Columbia.....	145	33	42		113	0	118	1	111
Virginia.....	553	86	434		240	3	119	28	1,610
West Virginia.....	104	51	1,758	14	119	8	126	24	457
North Carolina.....	505	69	2,505		256	11		18	1,601
South Carolina.....	167	108	695	314	35	2	182	36	181
Georgia.....	219	47	173	191	46		196	72	145
Florida.....	112	37	38	18	19	1	63	36	43
Kentucky <sup>1</sup> .....									
Tennessee.....	156	47	819	166	182	94	201	35	554
Alabama.....	221	77	111	199	71	81	438	39	304
Mississippi.....	594	29	79	248	36	104	110	18	763
Arkansas.....	70	12	10	54	19	46		17	53
Louisiana.....	22	101	253	6	45	17	125	60	56
Oklahoma <sup>2</sup> .....	78	59	157	53	81	55	79	25	122
Texas.....		158			166			24	
Montana.....	116	7	486	24	55	20	43	8	37
Idaho.....	154	5	3	68	26	5	11	1	
Wyoming.....	5		59	59	26	4	1	6	4
Colorado.....	463	29	664	602	152	5	102	5	212
New Mexico.....	67	55	262	69	50	1	41	9	87
Arizona.....	128	12	9	11	40	2	95	5	64
Utah <sup>3</sup> .....									
Nevada.....	23		50		3	1	13	1	40
Washington.....	269	21	1,606	76	143	106	143	6	155
Oregon.....	181	9	1,434	157	81	72	71	13	181
California.....	3,722	322	2,449	883	688	50	1,035	40	1,637

<sup>1</sup> Pulmonary.<sup>2</sup> Exclusive of Kansas City, St. Joseph, and St. Louis.<sup>3</sup> Reports received weekly.<sup>4</sup> Exclusive of Oklahoma City and Tulsa.

## Case Rates per 100,000 Population (Annual Basis) for the Month of April, 1932

State	Chicken pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- cu- losis	Typhoid and para- typhoid fever	Whoop- ing cough
Maine.....	186	6	1,719	116	254	0	99	3	195
New Hampshire.....	10	10			385			13	
Vermont.....	85	14	1,856	1,447	186	47	147	3	278
Massachusetts.....	284	37	881	394	638	0	145	3	255
Rhode Island.....	54	40	1,062	386	475	0	119	3	110
Connecticut.....	295	19	474	242	321	1	101	6	386
New York.....	233	44	885	166	649	3	149	3	243
New Jersey.....	319	35	802	332	394	0	139	2	372
Pennsylvania.....	345	42	1,064	391	441	0	101	5	393
Ohio.....	216	33	1,606	159	302	17	129	6	500
Indiana.....	141	49	154	208	208	18	92	2	208
Illinois.....	180	48	618	56	265	5	190	4	241
Michigan.....	233	19	1,800	363	445	7	119	6	377
Wisconsin.....	504	17	3,240	418	190	4	41	6	617
Minnesota.....	90	22	81		288	3	117	2	88
Iowa.....	70	15	6	56	115	87	31	4	62
Missouri.....	106	14	122	93	176		185	2	201
North Dakota.....	66	25	323	45	130	41	18	7	39
South Dakota.....	35	33	63	45	23	12	30	14	241
Nebraska.....	145	19	10	190	111	42	18	1	90
Kansas.....	367	23	1,275	346	150	14	77	5	279
Delaware.....	101	81	20	243	415	0	86	5	304
Maryland.....	426	38	122	476	401	0	168	16	614
Dist. of Columbia.....	358	81	104		279	0	291	2	374
Virginia.....	277	43	217		120	2	60	14	307
West Virginia.....	72	35	1,217	10	82	6	87	17	316
North Carolina.....	190	26	941		96	4		7	601
South Carolina.....	117	75	486	219	24	1	127	25	125
Georgia.....	92	20	73	80	19		82	30	61
Florida.....	99	29	30	14	15	1	50	29	84
Kentucky <sup>1</sup> .....									
Tennessee.....	73	22	377	76	84	43	92	16	235
Alabama.....	109	35	50	90	32	37	196	18	138
Mississippi.....	356	17	47	149	22	62	66	11	457
Arkansas.....	46	8	7	35	12	30		11	85
Louisiana.....	13	58	144	3	26	10	171	34	82
Oklahoma <sup>4</sup> .....	46	34	92	31	47	32	46	15	71
Texas.....		32			34			5	
Montana.....	263	16	1,103	77	125	45	98	18	84
Idaho.....	420	14	8	186	71	14	30	3	
Wyoming.....	27		313	312	136	21	5	32	21
Colorado.....	536	34	773	701	177	6	119	6	247
New Mexico.....	190	156	742	195	142	3	116	26	246
Arizona.....	349	33	25	30	109	5	209	14	174
Utah <sup>1</sup> .....									
Nevada.....	302		656		39	13	139	13	335
Washington.....	206	16	1,234	58	110	81	110	5	119
Oregon.....	226	11	1,793	196	101	90	89	16	226
California.....	761	66	501	181	141	10	212	8	335

<sup>1</sup> Pulmonary.<sup>2</sup> Exclusive of Kansas City, St. Joseph, and St. Louis.<sup>3</sup> Reports received weekly.<sup>4</sup> Exclusive of Oklahoma City and Tulsa.

## ADMISSIONS TO HOSPITALS FOR THE INSANE, DECEMBER, 1930

Reports for the month of December, 1930, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 117 hospitals, located in 37 States, the District of Columbia, and the Territory of Hawaii. These hospitals had 179,276 patients on December 31, 1930, 95,341 males and 83,935 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of December, 1930, by psychoses:

Psychoses	Male	Female	Total
1. Traumatic psychoses.....	20	4	24
2. Senile psychoses.....	164	91	255
3. Psychoses with cerebral arteriosclerosis.....	192	110	302
4. General paralysis.....	222	59	281
5. Psychoses with cerebral syphilis.....	25	15	40
6. Psychoses with Huntington's chorea.....	3	3	6
7. Psychoses with brain tumor.....	1	0	1
8. Psychoses with other brain or nervous disease.....	22	15	37
9. Alcoholic psychoses.....	153	12	165
10. Psychoses due to drugs and other exogenous toxins.....	4	5	9
11. Psychoses with pellagra.....	4	4	8
12. Psychoses with other somatic diseases.....	32	25	57
13. Manic-depressive psychoses.....	197	221	418
14. Involution melancholia.....	11	49	60
15. Dementia præcox (schizophrenia).....	324	280	604
16. Paranoia and paranoid conditions.....	33	32	65
17. Epileptic psychoses.....	40	34	74
18. Psychoneuroses and neuroses.....	23	44	67
19. Psychoses with psychopathic personality.....	18	9	27
20. Psychoses with mental deficiency.....	61	36	97
21. Undiagnosed psychoses.....	103	101	204
22. Without psychosis.....	155	47	202
Total.....	1,807	1,196	3,003

During the month of December, 1930, there were 3,003 new admissions to the hospitals, 60.2 per cent of these new admissions being males and 39.8 per cent females, the ratio being 151 males per 100 females. Four hundred and six of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,597 new admissions for whom provisional diagnoses were made. Of these 2,597 patients, cases of dementia præcox constituted 23.3 per cent.; manic-depressive psychoses, 16.1 per cent; psychoses with cerebral arteriosclerosis, 11.6 per cent; general paralysis, 10.8 per cent; and senile psychoses, 9.8 per cent. These five classes accounted for 1,860 patients, or 71.6 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on December 30, 1930:

	Male	Female	Total
Patients on books last day of month:			
In hospitals.....	86,702	76,253	162,955
On parole or otherwise absent, but still on books.....	8,639	7,682	16,321
Total.....	95,341	83,935	179,276

Of the 179,276 patients, 8,639 males and 7,682 females were on parole or otherwise absent but still on the books at the end of the month, 9.06 per cent of the males, 9.15 per cent of the females, and 9.10 per cent of the total number of patients.

**GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES**

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,980,000. The estimated population of the 90 cities reporting deaths is more than 32,420,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended June 4, 1932, and June 6, 1931*

	1932	1931	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	619	637	-----
97 cities.....	295	426	686
Measles:			
45 States.....	16,946	18,588	-----
97 cities.....	8,871	7,027	-----
Meningococcus meningitis:			
46 States.....	72	92	-----
97 cities.....	30	40	-----
Poliomyelitis: 46 States.....	22	26	-----
Scarlet fever:			
46 States.....	4,425	4,207	-----
97 cities.....	1,965	1,963	1,179
Smallpox:			
46 States.....	279	878	-----
97 cities.....	35	93	82
Typhoid fever:			
46 States.....	215	242	-----
97 cities.....	44	40	48
<i>Deaths reported</i>			
Influenza and pneumonia: 90 cities.....	505	564	-----
Smallpox: 90 cities.....	0	0	-----

*City reports for week ended June 4, 1932*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1923 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine: Portland.....	2	0	0	-----	0	2	4	1
New Hampshire:								
Concord.....	0	0	0	-----	0	2	0	0
Manchester.....	0	0	0	-----	0	0	0	4
Nashua.....	0	0	0	-----	0	0	2	0
Vermont:								
Barre.....	0	0	0	-----	0	0	1	0
Burlington.....	0	0	0	-----	0	0	5	0
Massachusetts:								
Boston.....	45	25	13	-----	1	153	81	16
Fall River.....	0	2	3	-----	0	42	0	0
Springfield.....	17	2	1	-----	0	198	13	1
Worcester.....	11	3	1	-----	0	30	3	5
Rhode Island:								
Pawtucket.....	0	1	0	-----	0	0	0	0
Providence.....	19	4	1	-----	1	6	0	5
Connecticut:								
Bridgeport.....	2	4	0	-----	0	28	0	3
Hartford.....	2	3	0	-----	0	6	9	4
New Haven.....	22	0	0	-----	0	2	24	3
MIDDLE ATLANTIC								
New York:								
Buffalo.....	23	7	3	-----	0	50	0	20
New York.....	276	216	80	10	5	547	193	109
Rochester.....	6	3	3	-----	0	9	12	0
Syracuse.....	5	0	0	-----	0	147	1	0
New Jersey:								
Camden.....	3	5	2	-----	0	0	4	2
Newark.....	47	12	4	2	0	80	201	4
Trenton.....	11	2	0	-----	1	0	0	2
Pennsylvania:								
Philadelphia.....	75	52	7	6	1	11	95	32
Pittsburgh.....	81	15	4	-----	0	73	20	17
Reading.....	9	1	2	-----	0	17	0	1
Scranton.....	3	-----	1	-----	-----	2	0	-----
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	7	4	0	-----	1	0	0	4
Cleveland.....	98	21	5	3	1	436	65	17
Columbus.....	3	3	1	-----	0	28	1	2
Toledo.....	46	3	0	-----	0	73	0	8
Indiana:								
Fort Wayne.....	2	1	3	-----	0	0	0	1
Indianapolis.....	72	2	0	-----	0	15	134	8
South Bend.....	4	1	0	-----	0	2	0	0
Terre Haute.....	2	0	1	-----	0	37	0	1
Illinois:								
Chicago.....	132	80	29	-----	1	449	14	41
Springfield.....	4	0	0	1	0	1	1	2
Michigan:								
Detroit.....	79	39	15	-----	2	1,263	34	20
Flint.....	37	1	1	3	0	57	14	0



## City reports for week ended June 4, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
		Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha.....	0	0	0		0	230	0	0
Madison.....	8	1	0			0	0	
Milwaukee.....	43	11	4		0	637	12	4
Racine.....	15	1	0		0	85	16	0
Superior.....	3	0	0		0	1	3	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	6	0	0		0	0	1	1
Minneapolis.....	25	9	4		0	13	22	2
St. Paul.....	27	6	0		0	11	24	6
Iowa:								
Des Moines.....	0	1	2			0	0	
Sioux City.....	14	0	1			0	0	
Waterloo.....	6	0	0			0	0	
Missouri:								
Kansas City.....	22	2	0		1	25	19	3
St. Joseph.....	0	0	1		0	0	0	1
St. Louis.....	27	30	16			8	8	3
North Dakota:								
Fargo.....	16	0	0		0	11	0	1
Grand Forks.....	1	0	0			15	0	
South Dakota:								
Aberdeen.....	2	0	0			5	0	
Nebraska:								
Omaha.....	7	2	7		0	7	2	3
Kansas:								
Topeka.....	43	0	0		0	9	0	2
Wichita.....	0	1	1		1	7	2	2
SOUTH ATLANTIC								
Delaware, Wilming- ton.....								
	0	1	0		0	0	1	0
Maryland:								
Baltimore.....	109	16	1	2	3	4	113	15
Cumberland.....	2	0	1		0	6	0	0
Frederick.....	0	0	0		0	7	0	0
District of Columbia, Washington.....	38	9	6		0	20	0	6
Virginia:								
Lynchburg.....	6	0	0		0	2	0	1
Norfolk.....	4	0	1		0	11	0	3
Richmond.....	0	1	1		0	0	0	2
Roanoke.....	8	0	3		0	0	0	0
West Virginia:								
Charleston.....	1	0	0		0	1	0	2
Huntington.....	0		1		0	15	0	0
Wheeling.....	0	0	0		0	41	0	1
North Carolina:								
Raleigh.....	3	0	0		0	1	0	6
Wilmington.....	4	0	0		1	0	0	1
Winston-Salem.....	1	0	0	2		34	2	1
South Carolina:								
Charleston.....	0	0	0	17	1	1	0	1
Columbia.....	5	0	0		2	28	0	7
Greenville.....	0	0	0		0	19	1	0
Georgia:								
Atlanta.....	4	1	2	5	0	0	0	11
Brunswick.....	0	0	0		0	1	0	0
Savannah.....	0	0	0	20	0	24	0	0
Florida:								
Miami.....	1	1	2		0	2	0	1
Tampa.....	1	0	0		0	0	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Coyington.....		0						
Lexington.....	0		0		0	0	1	1
Tennessee:								
Memphis.....	2	0	2		0	20	0	4
Nashville.....	0	0	0		2	1	0	

## City reports for week ended June 4, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL—continued								
Alabama:								
Birmingham.....	4	1	1	8	0	0	0	3
Mobile.....	1	0	0	-----	0	0	0	2
Montgomery.....	0	0	2	-----	-----	0	1	-----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	0	0	-----	-----	0	0	-----
Little Rock.....	0	0	0	0	0	0	0	0
Louisiana:								
New Orleans.....	0	7	12	3	2	0	0	6
Shreveport.....	0	0	0	-----	0	6	10	7
Oklahoma:								
Muskogee.....	0	-----	0	-----	0	1	0	0
Oklahoma City..	6	1	1	10	0	0	0	4
Texas:								
Dallas.....	7	2	3	-----	0	-----	1	3
Fort Worth.....	5	1	2	-----	0	1	0	0
Galveston.....	0	0	0	-----	0	0	0	0
Houston.....	0	3	3	-----	1	9	1	4
San Antonio.....	0	1	0	-----	0	0	0	5
MOUNTAIN								
Montana:								
Billings.....	0	0	0	-----	0	0	0	0
Great Falls.....	0	0	0	-----	0	3	0	2
Helena.....	5	0	0	-----	0	1	0	0
Missoula.....	2	0	0	-----	0	0	0	0
Idaho:								
Boise.....	0	0	0	-----	0	9	0	1
Colorado:								
Denver.....	51	6	3	-----	0	94	67	9
Pueblo.....	5	0	0	-----	0	1	0	0
New Mexico:								
Albuquerque.....	2	0	0	-----	0	11	0	0
Arizona:								
Phoenix.....	1	-----	0	-----	0	0	0	0
Utah:								
Salt Lake City...	71	2	0	-----	0	2	3	2
Nevada:								
Reno.....	0	0	0	-----	0	1	0	1
PACIFIC								
Washington:								
Seattle.....	21	2	3	-----	-----	43	6	-----
Spokane.....	15	1	0	-----	-----	16	0	-----
Tacoma.....	5	1	1	-----	0	68	1	0
Oregon:								
Portland.....	5	4	3	1	0	94	3	2
California:								
Los Angeles.....	141	26	35	25	1	21	17	9
Sacramento.....	32	3	2	-----	0	3	1	5
San Francisco.....	51	11	1	2	0	123	17	9

## City reports for week ended June 4, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland.....	2	5	0	0	0	1	0	0	0	7	18
New Hampshire:											
Concord.....	0	2	0	0	0	3	0	0	0	0	21
Manchester.....	1	0	0	0	0	1	0	0	0	0	27
Nashau.....	0	1	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	1	0	0	0	0	0	0	0	0	3	8
Burlington.....	0	0	0	0	0	0	0	0	0	1	7
Massachusetts:											
Boston.....	65	130	0	0	0	8	1	2	0	31	200
Fall River.....	4	6	0	0	0	2	0	0	0	0	22
Springfield.....	8	10	0	0	0	1	0	0	0	3	30
Worcester.....	10	27	0	0	0	0	0	0	0	10	34
Rhode Island:											
Pawtucket.....	2	0	0	0	0	0	0	0	0	0	15
Providence.....	10	24	0	0	0	4	0	0	0	3	53
Connecticut:											
Bridgeport.....	7	2	0	0	0	1	0	0	0	4	30
Hartford.....	3	7	0	0	0	0	0	0	0	0	33
New Haven.....	3	15	0	0	0	0	1	0	0	6	35
MIDDLE ATLANTIC											
New York:											
Buffalo.....	22	53	0	0	0	8	0	1	0	27	133
New York.....	222	574	0	0	0	88	10	3	0	157	1,426
Rochester.....	11	39	0	0	0	2	0	0	0	2	64
Syracuse.....	9	8	0	0	0	0	0	0	0	28	46
New Jersey:											
Camden.....	5	25	0	0	0	1	0	0	0	0	35
Newark.....	23	27	0	0	0	5	0	0	0	31	82
Trenton.....	2	13	0	0	0	0	0	0	0	0	17
Pennsylvania:											
Philadelphia.....	86	139	0	0	0	21	2	1	0	84	464
Pittsburgh.....	30	62	0	0	0	4	1	1	1	27	146
Reading.....	4	6	0	0	0	2	0	0	0	10	27
Scranton.....		9		0				0		2	-----
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	18	28	2	0	0	9	1	1	0	6	109
Cleveland.....	38	89	0	0	0	8	0	2	0	80	159
Columbus.....	7	5	0	0	0	3	0	1	0	2	67
Toledo.....	12	8	1	0	0	5	0	0	0	37	72
Indiana:											
Fort Wayne.....	4	0	2	4	0	0	0	0	0	0	19
Indianapolis.....	13	4	8	0	0	2	0	0	0	41	-----
South Bend.....	3	2	0	0	0	1	0	0	0	0	19
Terre Haute.....	2	0	0	0	0	0	0	0	0	0	9
Illinois:											
Chicago.....	110	190	2	0	0	46	2	0	1	92	619
Springfield.....	3	0	0	0	0	1	1	3	0	0	18
Michigan:											
Detroit.....	110	218	1	0	0	27	1	2	0	143	266
Flint.....	11	4	2	0	0	1	0	0	0	21	22
Grand Rapids.....	10	3	0	0	0	0	0	0	0	9	23
Wisconsin:											
Kenosha.....	2	1	0	0	0	1	0	0	0	5	13
Madison.....	3	1	0	0	0		0	0	-----	30	-----
Milwaukee.....	28	24	0	0	0	12	0	0	0	85	103
Racine.....	3	0	0	0	0	0	0	0	0	0	11
Superior.....	3	0	0	0	0	0	0	0	0	4	4
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	7	1	0	0	0	0	0	1	0	0	20
Minneapolis.....	27	30	1	3	0	4	0	0	0	28	90
St. Paul.....	10	16	0	0	0	3	0	0	0	45	59

## City reports for week ended June 4, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CEN- TRAL—contd.											
Iowa:											
Des Moines.....	5	4	2	1	-----	-----	0	0	-----	0	24
Sioux City.....	2	2	0	3	-----	-----	1	0	-----	3	-----
Waterloo.....	2	2	0	0	-----	-----	1	0	-----	2	-----
Missouri:											
Kansas City.....	10	7	0	0	0	4	0	0	0	10	95
St. Joseph.....	2	0	0	0	0	1	0	0	0	1	19
St. Louis.....	55	12	2	0	0	5	1	0	0	22	180
North Dakota:											
Fargo.....	0	0	0	0	0	0	0	0	0	1	13
Grand Forks.....	0	0	0	0	-----	-----	0	0	-----	0	-----
South Dakota:											
Aberdeen.....	1	0	0	0	-----	-----	0	0	-----	3	-----
Nebraska:											
Omaha.....	4	1	5	9	0	1	0	0	0	0	52
Kansas:											
Topeka.....	2	0	0	0	0	0	0	0	0	0	15
Wichita.....	2	0	2	0	0	1	0	0	0	5	28
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	3	6	0	0	0	2	0	0	0	1	26
Maryland:											
Baltimore.....	33	33	0	0	0	18	2	3	0	80	194
Cumberland.....	0	0	0	0	0	0	0	0	0	0	8
Frederick.....	0	0	0	0	0	0	0	0	0	0	2
District of Colum- bia:											
Washington.....	18	14	0	0	0	22	1	0	0	17	178
Virginia:											
Lynchburg.....	0	0	0	0	0	0	0	0	0	22	4
Norfolk.....	1	1	0	0	0	2	0	0	0	3	33
Richmond.....	3	2	0	0	0	1	0	0	0	28	40
Roanoke.....	0	4	0	0	0	0	0	0	0	2	14
West Virginia:											
Charleston.....	0	1	0	0	0	0	0	0	0	1	11
Huntington.....	-----	1	-----	0	0	0	-----	0	0	0	-----
Wheeling.....	1	0	0	0	0	1	0	0	0	8	13
North Carolina:											
Raleigh.....	0	0	0	0	0	2	0	0	0	3	11
Wilmington.....	0	0	0	0	0	0	0	0	0	2	11
Winston-Salem.....	0	11	0	0	0	1	1	0	0	16	16
South Carolina:											
Charleston.....	0	1	0	0	0	7	0	2	1	0	32
Columbia.....	0	0	0	0	0	1	1	0	0	0	41
Greenville.....	0	0	1	0	0	0	0	0	0	2	-----
Georgia:											
Atlanta.....	4	3	3	0	0	6	1	1	0	3	86
Brunswick.....	0	0	0	0	0	0	1	1	0	0	2
Savannah.....	0	0	0	0	0	1	1	1	1	4	31
Florida:											
Miami.....	0	0	0	0	0	4	1	0	0	3	23
Tampa.....	0	0	0	0	0	3	0	0	0	0	20
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	1	-----	0	-----	-----	-----	0	-----	-----	0	-----
Lexington.....	-----	0	-----	0	0	1	-----	0	0	0	11
Tennessee:											
Memphis.....	5	1	0	2	0	10	3	4	1	24	96
Nashville.....	2	0	1	0	0	2	2	0	0	6	57
Alabama:											
Birmingham.....	0	0	2	0	0	2	1	0	0	1	43
Mobile.....	0	0	0	3	0	0	1	1	1	0	18
Montgomery.....	0	0	0	0	-----	-----	0	0	-----	0	-----

## City reports for week ended June 4, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culo- sis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0			1	0		2	
Little Rock.....	0	0	0	0	0	2	1	0	0	0	2
Louisiana:											
New Orleans.....	6	6	0	0	0	4	3	0	0	12	124
Shreveport.....	0	1	0	0	0	1	0	0	0	9	33
Oklahoma:											
Muskogee.....	0	0	0	1	0	0	0	0	0	0	
Oklahoma City.....	2	4	0	1	0	2	0	0	0	16	34
Texas:											
Dallas.....	3	2	2	2	0	0	1	2	1	5	49
Fort Worth.....	2	4	2	1	0	1	0	0	0	0	23
Galveston.....	0	2	0	0	0	0	0	0	0	0	6
Houston.....	1	2	2	0	0	2	0	1	1	0	59
San Antonio.....	1	0	0	0	0	7	1	0	0	0	58
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	0	0	0	8
Great Falls.....	1	1	0	0	0	0	0	0	0	0	11
Helena.....	0	0	0	0	0	0	0	0	0	0	6
Missoula.....	1	0	0	0	0	0	0	0	0	0	8
Idaho:											
Boise.....	0	1	0	0	0	0	0	0	0	0	7
Colorado:											
Denver.....	10	9	0	0	0	7	0	1	0	32	97
Pueblo.....	1	0	0	0	0	0	0	0	0	8	4
New Mexico:											
Albuquerque.....	0	0	0	0	0	2	0	0	0	0	6
Arizona:											
Phoenix.....	1	1	0	0	0	0	0	0	0	0	
Utah:											
Salt Lake City.....	2	1	0	0	0	2	0	0	0	6	31
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	8	7	1	0			0	3		0	
Spokane.....	3	2	5	1			0	2		5	
Tacoma.....	3	0	3	3	0	0	0	0	0	1	25
Oregon:											
Portland.....	3	0	8	4	0	2	0	0	0	2	64
California:											
Los Angeles.....	26	42	5	5	0	26	2	1	0	56	264
Sacramento.....	2	0	1	0	0	2	0	2	0	9	16
San Francisco.....	18	0	0	0	0	9	1	1	0	15	151

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	
<b>NEW ENGLAND</b>										
Massachusetts:										
Boston.....	1	1	0	0	0	0	0	0	0	0
Rhode Island:										
Providence.....	0	0	1	0	0	0	0	0	0	0

## City reports for week ended June 4, 1932—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic en- cephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo.....	1	0	0	0	0	0	0	0	0
New York.....	5	6	1	0	0	0	1	1	0
Pennsylvania:									
Philadelphia.....	3	2	0	0	0	0	0	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	2	1	0	0	0	0	0	0	0
Indiana:									
Indianapolis.....	4	0	0	0	0	0	0	0	0
Illinois:									
Chicago.....	4	1	0	0	0	0	0	0	0
Michigan:									
Detroit.....	1	2	3	0	0	0	0	1	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	0	1	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	4	3	1	0	0	0	0	0	0
<b>SOUTH ATLANTIC <sup>1</sup></b>									
Maryland:									
Baltimore.....	0	0	0	0	0	0	0	1	0
Virginia:									
Roanoke.....	0	0	0	0	0	1	0	0	0
North Carolina:									
Raleigh.....	0	1	0	0	0	0	0	0	0
Wilmington.....	0	0	0	0	0	1	0	0	0
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	4	0	0	1	0
Columbia.....	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta.....	2	0	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	3	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Lexington.....	0	0	0	0	1	0	0	0	0
Tennessee:									
Memphis.....	0	0	0	0	5	4	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Louisiana:									
New Orleans.....	1	1	0	0	2	2	0	0	0
Texas:									
Dallas.....	0	0	0	0	2	2	0	0	0
Houston.....	0	0	0	0	0	1	0	0	0
San Antonio.....	0	0	0	0	0	0	0	1	0
<b>MOUNTAIN</b>									
Montana:									
Great Falls.....	0	0	0	0	0	0	0	0	1
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	1	0	0	0	0	0	0	0	0
California:									
Los Angeles.....	0	1	0	0	0	0	1	1	0

<sup>1</sup> Typhus fever, 1 case and 1 death at Tampa, Fla.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended June 4, 1932, compared with those for a like period ended June 6, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

*Summary of weekly reports from cities, May 1 to June 4, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931*<sup>1</sup>

## DIPHTHERIA CASE RATES

	Week ended—									
	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931	May 28, 1932	May 30, 1931	June 4, 1932	June 6, 1931
98 cities.....	49	1 67	44	63	39	62	1 48	59	1 45	67
New England.....	34	38	42	38	41	48	55	50	46	46
Middle Atlantic.....	48	61	42	56	14	63	43	68	46	74
East North Central.....	33	52	22	72	26	67	36	61	35	75
West North Central.....	58	71	35	71	63	75	66	64	57	55
South Atlantic.....	46	63	29	55	33	39	25	42	27	40
East South Central.....	46	41	40	18	12	12	16	18	11	12
West South Central.....	59	108	92	81	96	81	135	54	60	68
Mountain.....	9	1 27	26	61	52	61	1 36	82	26	191
Pacific.....	97	61	69	74	86	73	67	87	80	49

## MEASLES CASE RATES

	1, 226	1, 305	1, 157	1, 403	1, 137	1, 373	1, 022	1, 115	1 826	1, 096
98 cities.....	1, 002	1, 063	1, 196	1, 166	951	1, 190	1, 376	935	1, 124	983
New England.....	478	1, 434	487	1, 486	534	1, 479	557	1, 168	413	1, 102
Middle Atlantic.....	3, 317	1, 101	2, 962	1, 811	2, 908	1, 457	2, 379	1, 302	1, 962	1, 445
East North Central.....	243	1, 016	254	1, 397	188	1, 098	176	641	172	817
West North Central.....	428	3, 559	569	3, 871	498	2, 845	490	2, 083	333	1, 476
South Atlantic.....	0	1, 275	12	1, 245	6	1, 245	1 12	1, 057	1 161	1, 151
East South Central.....	40	182	30	166	46	271	40	294	49	254
West South Central.....	810	1 555	1, 069	531	844	618	1 562	461	957	870
Mountain.....	888	502	763	555	664	457	748	492	522	512
Pacific.....										

## SCARLET FEVER CASE RATES

	444	1 390	427	389	384	368	1 397	306	1 302	310
98 cities.....	678	630	647	666	673	536	645	351	546	414
New England.....	706	448	709	439	570	442	566	305	418	355
Middle Atlantic.....	397	438	385	453	354	412	428	437	338	422
East North Central.....	182	440	195	293	188	341	174	291	185	286
West North Central.....	265	277	243	243	208	241	194	239	147	198
South Atlantic.....	52	253	17	841	17	394	1 56	300	1 6	153
East South Central.....	43	105	23	108	49	85	53	51	43	41
West South Central.....	155	1 170	147	157	148	270	1 187	165	103	104
Mountain.....	145	106	135	128	162	88	145	110	97	86
Pacific.....										

## SMALLPOX CASE RATES

	8	1 15	5	17	7	16	1 5	15	1 5	14
98 cities.....	0	0	0	0	0	0	0	0	0	0
New England.....	0	0	0	1	0	4	0	1	0	0
Middle Atlantic.....	0	6	4	23	3	15	0	11	2	16
East North Central.....	13	78	21	75	23	67	23	88	26	42
West North Central.....	0	8	0	6	0	6	2	24	0	18
South Atlantic.....	64	41	17	12	35	41	1 37	6	1 11	18
East South Central.....	7	64	7	41	20	47	0	37	7	41
West South Central.....	138	1 9	17	17	61	9	1 0	26	6	36
Mountain.....	25	12	11	25	17	12	21	12	17	23
Pacific.....										

See footnotes at end of table.

Summary of weekly reports from cities, May 1 to June 4, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931<sup>1</sup>—Continued.

## TYPHOID FEVER CASE RATES

	Week ended—									
	May 7, 1932	May 9, 1931	May 14, 1932	May 16, 1931	May 21, 1932	May 23, 1931	May 28, 1932	May 30, 1931	May 4, 1932	June 6, 1931
98 cities.....	5	5	6	5	8	6	18	7	17	6
New England.....	0	5	12	5	10	2	0	2	5	2
Middle Atlantic.....	6	5	4	5	5	5	4	8	3	5
East North Central.....	3	2	2	2	4	5	8	2	5	1
West North Central.....	6	2	9	6	9	10	2	4	2	10
South Atlantic.....	10	8	8	12	25	12	18	22	16	20
East South Central.....	17	6	0	18	6	18	31	12	31	18
West South Central.....	10	7	16	7	10	7	8	7	10	10
Mountain.....	6	10	9	0	9	0	19	17	9	17
Pacific.....	0	8	4	0	10	8	19	2	17	4

## INFLUENZA DEATH RATES

91 cities.....	10	12	9	8	7	7	15	7	15	6
New England.....	2	5	7	2	0	5	0	10	5	2
Middle Atlantic.....	8	11	9	7	5	5	4	3	3	5
East North Central.....	5	11	8	5	5	5	6	6	3	2
West North Central.....	12	6	6	9	20	3	2	9	6	6
South Atlantic.....	24	22	8	16	6	4	14	18	14	14
East South Central.....	50	51	44	51	6	19	14	19	14	38
West South Central.....	10	14	7	7	24	28	3	14	10	10
Mountain.....	34	27	9	9	0	26	10	17	0	0
Pacific.....	5	7	7	7	0	0	5	5	2	7

## PNEUMONIA DEATH RATES

91 cities.....	108	117	103	102	98	95	86	101	77	86
New England.....	129	130	98	113	125	72	101	111	91	120
Middle Atlantic.....	120	144	130	121	109	121	97	109	83	102
East North Central.....	91	87	91	73	86	68	66	75	60	59
West North Central.....	70	121	102	109	105	97	105	133	67	138
South Atlantic.....	131	131	120	127	102	111	116	133	98	77
East South Central.....	75	121	63	127	75	121	61	185	95	76
West South Central.....	128	114	57	114	77	97	71	128	84	86
Mountain.....	86	98	69	78	131	70	107	70	129	87
Pacific.....	67	70	53	55	46	55	51	43	53	48

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1932, and 1931, respectively.

<sup>2</sup> Billings, Mont., not included.

<sup>3</sup> Covington, Ky., and Reno, not included.

<sup>4</sup> Reno, Nev., not included.

<sup>5</sup> Covington, Ky., not included.



## FOREIGN AND INSULAR

### CANADA

*Provinces—Communicable diseases—Week ended May 28, 1932.*—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended May 28, 1932, as follows:

	Cerebro-spinal fever	Influenza	Small-pox	Typhoid fever
Prince Edward Island <sup>1</sup> .....				
Nova Scotia <sup>1</sup> .....				
New Brunswick.....				1
Quebec.....	3			85
Ontario.....		4	23	8
Manitoba.....	1			
Saskatchewan.....			6	1
Alberta.....				1
British Columbia.....				8
Total.....	4	4	29	94

<sup>1</sup> No case of any disease included in the table was reported during the week.

*Quebec Province—Communicable diseases—Week ended May 28, 1932.*—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 28, 1932, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	3	Ophthalmia neonatorum.....	1
Chicken pox.....	77	Scarlet fever.....	81
Diphtheria.....	26	Tuberculosis.....	48
Erysipelas.....	11	Typhoid fever.....	85
German measles.....	1	Whooping cough.....	28
Measles.....	115		

### CHINA <sup>1</sup>

*Meningitis.*—According to recent information, cerebrospinal meningitis was reported in Hong Kong, Canton, and Macao, China, during the four weeks ended April 30, 1932, as follows:

	Cases	Deaths		Cases	Deaths
Hong Kong:			Canton—Continued.		
Week ended Apr. 9, 1932.....	19	10	Week ended Apr. 23, 1932.....	18	8
Week ended Apr. 16.....	32	12	Week ended Apr. 30.....	12	8
Week ended Apr. 23.....	27	15	Macao:		
Week ended Apr. 30.....	20	12	Week ended Apr. 9, 1932.....	44	94
Canton:			Week ended Apr. 16.....	14	26
Week ended Apr. 9, 1932.....	9	8	Week ended Apr. 23.....	16	12
Week ended Apr. 16.....	30	7	Week ended Apr. 30.....	10	15

<sup>1</sup> See also P. H. R., vol. 47, No. 17, Apr. 22, 1932, p. 970.

## GREAT BRITAIN

*Scotland—Vital statistics—Quarter ended March 31, 1932.*—The Registrar General of Scotland has published the following statistics for the first quarter of the year 1932:

Population (provisional).....	4,880,000	Deaths from—Continued.	
Births.....	23,088	Heart disease.....	2,653
Birth rate per 1,000 population.....	19.0	Influenza.....	808
Deaths.....	19,634	Lethargic encephalitis.....	22
Death rate per 1,000 population.....	16.2	Measles.....	555
Marriages.....	7,691	Nephritis, acute.....	58
Deaths under 1 year.....	2,573	Nephritis, chronic.....	384
Deaths under 1 year per 1,000 births.....	112	Pneumonia.....	368
Deaths from—		Pneumonia, lobar.....	513
Bronchitis.....	1,299	Puerperal sepsis.....	62
Broncho-pneumonia.....	1,224	Scarlet fever.....	85
Cerebrospinal fever.....	74	Syphilis.....	36
Diabetes.....	176	Tetanus.....	1
Diphtheria.....	128	Tuberculosis.....	1,194
Dysentery.....	9	Typhoid fever.....	5
Erysipelas.....	56	Whooping cough.....	121

## PANAMA CANAL ZONE

*Communicable diseases—April, 1932.*—During the month of April, 1932, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	18	—	Meningitis, meningococcus.....	1	1
Diphtheria.....	6	—	Mumps.....	1	—
Dysentery (amebic).....	1	1	Pneumonia.....	—	19
Dysentery (bacillary).....	3	—	Scarlet fever.....	1	1
Leprosy.....	1	—	Tuberculosis.....	—	28
Malaria.....	49	1	Typhoid fever.....	1	1
Measles.....	27	2	Whooping cough.....	8	1









## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place	Nov. 15- Dec. 12, 1931	Dec. 13- 1931- Jan. 8, 1932	Jan. 10- Feb. 6, 1932	Feb. 7- Mar. 5, 1932	Week ended —									
					March, 1932			April, 1932				May, 1932		
					12	19	26	2	9	16	23	30	7	14
Madagascar (see also table below): Tamatave		1												
Morocco	11													
Peru (see table below)														
Senegal (see table below)	6	1	1	1	4	1	1	1						
Siam	2	1	1		2									
South West Africa. <sup>1</sup>														
Syria: Beirut		P	P	P				P	1			1		
Union of South Africa: Orange Free State		P	P											
United States: California—Los Angeles—Plague-infected rats						10			1				2	

<sup>1</sup>80 cases of plague with 15 deaths have been reported in Ovamboland, South-West Africa, up to Apr. 30, 1932. All antiplague measures have been taken.

Place	Octo-ber, 1931	De-cem-ber, 1931	Jan-uary, 1932	Feb-ruary, 1932	March, 1932	April, 1932
British East Africa (see also table above): Kenya	64	44	17	33	22	18
Ecuador—						
Province—						
Chimborazo	2	8	8	13		
Lola	11	2	11			
Indo-China	3		17	P	P	
Madagascar (see also table above):	1	5	9			6
Province—						
Ambatolampy			23	40		
Ambositra	8	39	23	38		
Antistrabe	5	37	166	90		
Maevatanana	17	27	152	81		
Maevatanana	17	27	53	45		
Maevatanana	4	4	51	45		
Miarinarivo	18	10	15	13		
Moramanga	16	9	14	12		
Tananarive	13	25	13	9		
Tananarive	11	25	13	9		
Peru	120	186	248	293	148	
Department—	117	178	241	196	140	
Canele	8	27	11	2		
	7	11	8	2		
			3			
Peru—Continued.						
Department—Continued.						
Cajamarca	14	5				
Libertad	2					
Otuzco	9					
Lima	4					
Plague-infected rats	1					
Lima	1					
Piura	8					
Senegal	7					
Baol	6	2				
Dakar	4					
Diourbel	10	5				
Louga	19					
Rufisque	12					
Thies	16	1				
Yombel	5	2				
	7					
	9					
	5					

\* Reports incomplete.





Hong Kong	1	11	51	12	7	17	9	12	13	21	9	7	9	7	1
Manchuria—Dairen	2	6	23	7	6	7	8	2	6	6	6	7	6	7	2
Nanking	1	1	1	3	1	7	6	7	1	1	1	1	1	1	1
Shanghai—	1														
Foreigners only	77	135	167	30	29	13	30	22	24	22	22	16	6	5	6
Including natives	31	41	62	15	17	6	7	7	10	8	10	6	5	2	2
Szechow	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
Tientsin	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chosen (see table below)															
Columbia: Cal.	1	1													
Danoney															
Dutch East Indies: Batavia	1	1													
Egypt:															
Alexandria															
Cairo															
Suez															
France (see table below)															
Germany: Alt-la-Chapelle															
Gold Coast (see table below)															
Great Britain:															
England and Wales	216	227	258	76	61	41	95	70	57	96	62	68	76	56	56
London	118	100	136	28	22	22	45	26	25	48	34	41	30	25	25
London and Great Towns	191	182	203	57	56	37	86	57	63	86	51	59	60	47	47
Guatemala (see table below)															
Honduras:															
Calles															
Puerto Castilla															
Tehuacan															
Tehuacan															
Trujillo															
India:															
Bassein	2,298	2,361	4,776	3,006	2,320	2,818	3,877	4,093							
Bombay	1,066	464	970	580	405	518	731	783							
Calcutta															
Chittagong															
Cochin															
Karachi															

1 23 cases of smallpox with 8 deaths were reported at Vancouver, British Columbia, from Jan. 1 to Feb. 15, 1932.  
 2 600 cases of smallpox with 16 deaths were reported in Honduras from July, 1931, to Feb. 15, 1932.





## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## SMALLPOX—Continued

[C Indicates cases; D, deaths; P, present]

Place	Nov. 15- Dec. 12, 1931	Dec. 13, 1931- Jan. 9, 1932	Jan. 10- Feb. 6, 1932	Feb. 7- Mar. 5, 1932	Week ended—									
					March, 1932					April, 1932				
					12	19	26	2	9	16	23	30	7	14
On vessels—Continued.														
S. S. Hong Kiang at Singapore from Amoy, via Swatow and Hong Kong.....														
S. S. Hai Ning and S. S. Solvikken at Hong Kong.....			1											
S. S. Merbura at Aden from Colombo.....			P											
S. S. Tylisadane at Hong Kong from Shanghai and Amoy.....			2											
S. S. Poetung at Shanghai.....			P											
S. S. Baile at Penang from Negapatam.....			1											
S. S. MacGillivray at Suez from Rangoon.....			P											
S. S. Tynoni at Southampton from New Zealand.....														
S. S. Glenbank at Suez from Aden.....					1									
S. S. Tuscania at Suez from Bombay.....							1							1

1 A suspected case.

Place	No- ven- ber, 1931	De- cem- ber, 1931	January, 1932			February, 1932			March, 1932			April, 1932														
			1-10	11-20	21-31	1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-30												
Gold Coast.....	C				2																					
Indo-China (see also table above).....	D	120	509	11	107	191	1	145	206	309	230	275	222	230	175	247	146									
Ivory Coast.....	D	22	93	11	52	85		47	58	86	109	113	120	80	97	64										
Syria: Beirut.....	D	1																								
	C			2	3																	1				1

Place	October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932	Place	October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932
Chosen.....	C	7	2	1	6	30	Mexico (see also table above).....	427	419	423	498	368	308
France.....	D	1			3	9	Morocco.....	91	152	279	31	22	2
Guatemala.....	C		6	1			Turkey (see also table above).....				1	1	
	D				5								
				1	1								













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